

Operating and Installation Manual
Fire dampers
Type FK-EU

according to Declaration of Performance

DoP / FK-EU / DE / 2013 / 001



CE

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1 General information

About this manual

This operating and installation manual describes the following variants of the fire damper:

- FK-EU with fusible link
- FK-EU with spring return actuator

To ensure complete functioning of the fire damper, it is essential to read the provided operating manual before starting any work, and to comply with it. The manual must be given to the facilities manager when handing over the system. The facilities manager must include the manual with the system documentation.

The manufacturer does not accept any liability for any malfunction or damage resulting from non-compliance with these instructions or non-compliance with relevant statutory regulations.

This operating and installation manual is intended for specialist consultants, developers, and operators of the ventilation systems in which the fire dampers are to be installed. This manual is also intended for people conducting the following work:

- Transport and storage
- Installation
- Electrical connection
- Commissioning
- Operation
- Maintenance
- Decommissioning, removal and disposal

Scope of this manual

This operating and installation manual applies to fire dampers that are installed in Germany. National regulations must be observed.

Other applicable documentation

In addition to this manual the declaration of performance DoP / FK-EU / DE / 2013 / 001 applies.

Symbols used in this manual



Danger!

Designates danger to life and limb due to electrical voltage.



Warning!

Designates danger to life and limb.



Important!

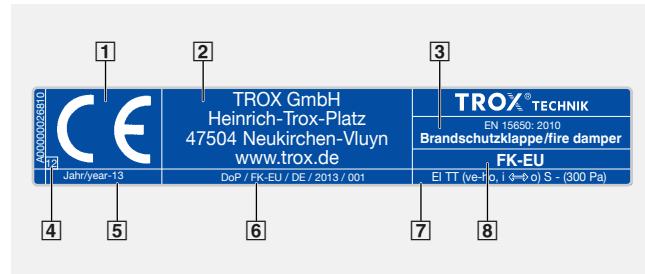
Designates danger that can cause minor personal injury or damage to property.



Note!

Designates important notes or information.

Rating plate with CE marking



① CE mark

② Manufacturer's address

③ Number of the European standard and year of its publication

④ The last two digits of the year of the marking

⑤ Year of manufacture

⑥ No. of the declaration of performance

⑦ Regulated characteristics

The fire resistance class depends on the application and may vary → P.10

⑧ Type

2 Safety and correct use

General information regarding safety

Only skilled, qualified personnel are allowed to perform the described work on the fire damper.

Only skilled qualified electricians are allowed to work on the electrical system.

The installation location must be easily accessible and have sufficient clearance for electrical connection and maintenance of the fire damper.

Standards and guidelines

- EN 15650:2010 Ventilation for buildings – fire dampers
- Classification to EN 13501-3 → P. 10
- Tested to EN 1366-2
- Closed blade air leakage to EN 1751, class 2
- Casing air leakage to EN 1751, class C; (B+H) ≤ 700, class B

Repair and replacement parts

The FK-EU fire damper is a safety related product that has been especially developed for fire protection. To maintain the function, only original TROX replacement parts must be used.

Environmental protection

To protect the environment observe the following:

- Dispose of packaging in an environmentally sound manner.
- Have used fire damper components or the used fire damper only disposed of by an authorised company.
- Dispose of electronic components according to the local electronic waste regulations.

Correct use

The fire damper is used as an automatic shut-off device to prevent fire and smoke from spreading through ducting.

The fire damper is suitable for supply air and extract air systems. Operation of the fire damper is allowed only in compliance with installation regulations and the technical data in this operating and installation manual.

Incorrect use

The following applications are not allowed:

- Use as a smoke extract damper
- Use as air transfer application¹
- Use in potentially explosive atmospheres²
- Use outdoors without sufficient protection against the effects of weather
- Use in extract air systems in commercial kitchens³
- Use in ventilation systems in which high levels of dust and pollution, extreme humidity, or chemical contamination impair the damper function³
- Installation in a way that prevents an inspection of the internal components of the fire damper³

Changes to the fire damper and the use of replacement parts that have not been approved by TROX are not permitted.

Residual risks

TROX fire dampers are subject to strict quality controls during manufacturing and to additional functional tests before shipping.

Damage can, however, occur during transport or installation and impair the function of the unit.

In any case, the proper function of the fire damper must be checked during commissioning and ensured through regular maintenance while in use.

¹ Use as air transfer application according to general building inspectorate licence Z-6.50-2031 is possible.

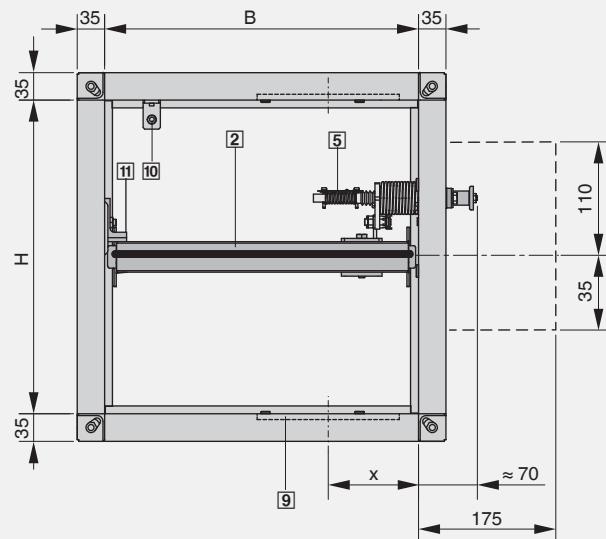
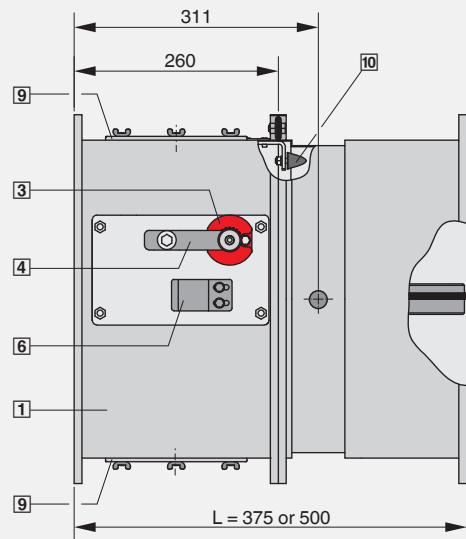
² Use in areas with potentially explosive atmospheres (Ex zones) is possible for appropriate explosion proof variants (accessories Z00EX, Z01Ex, Z02EX, Z03EX, ZEX1 and ZEX2)

³ Suitability has not been verified for this use.

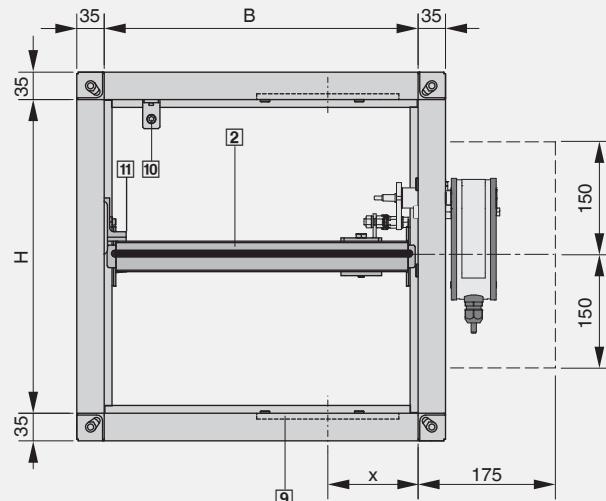
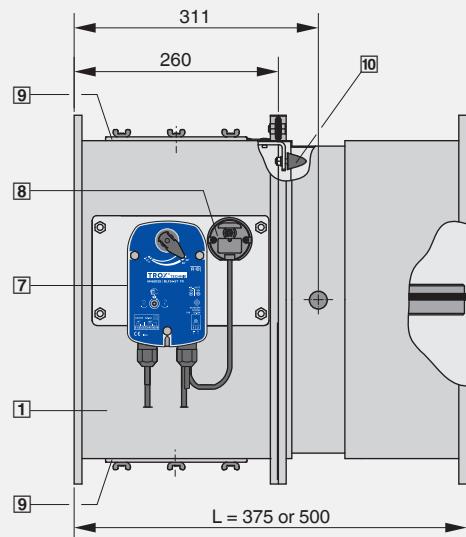
3 Product description

Product overview and dimensions

FK-EU with fusible link



FK-EU with spring return actuator



x = 115 mm, at B < 251 x = 94 mm

----- Keep clear to provide access to release mechanism or spring return actuator

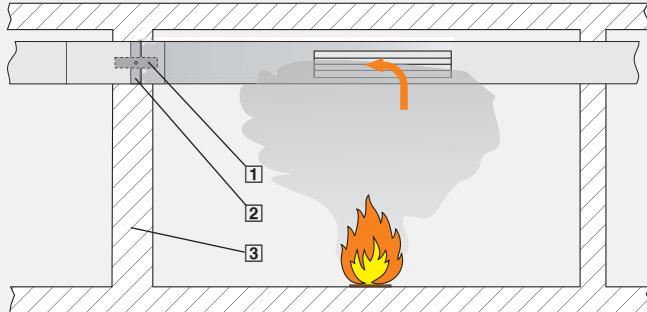
For B/H dimensions and weights, see „Technical data“ one page 7

- [1] Casing
- [2] Damper blade with lip seal (construction variant LD)
- [3] Release mechanism (side inspection access)
- [4] Handle and damper blade position indicator
- [5] Fusible link
- [6] Interlock
- [7] Spring return actuator

- [8] Thermoelectric release mechanism
- [9] Inspection panel d=138 mm / D=180 mm
- [10] Travel stop in CLOSED position (only for construction variant LD, with lip seal)
- [11] Travel stop in OPEN position
- W Nominal width → P. 7
- H Nominal height → P. 7

3 Product description

Functional diagram



- [1] Damper blade OPEN
- [2] Damper blade CLOSED in case of a fire
- [3] Fire-resistant wall

Functional description

Fire dampers are used as safety related components in ventilation systems. Each fire damper is used as an automatic shut-off device to prevent fire and smoke from spreading through ducting.

During normal operation the damper blade is open to enable air passage through the ventilation system.

If the temperature increases in case of a fire, the damper blade closes. The damper is triggered either by a fusible link at 72 °C (95 °C in the case of warm air ventilation systems) or thermoelectrically with a spring return actuator.

If the damper blade closes due to a temperature increase (i.e. in case of a fire), it must not be reopened.

The proper functioning of the fire damper can be tested in two ways, depending on the release mechanism
→ „Functional test“ one page 44.

FK-EU with fusible link

If the temperature inside the fire damper rises to 72 °C or 95 °C, respectively, the fusible link triggers a coil spring mechanism. The coil spring mechanism then causes the fire damper to close.

As an option, the fire damper can be either supplied or subsequently fitted with one or two limit switches. The limit switches can signal the damper blade position to the central BMS or fire alarm system. One limit switch each is required for damper blade positions OPEN and CLOSED.

FK-EU with spring return actuator

The spring return actuator enables the motorised opening and closing of the damper blade; it can be activated by the central BMS. As long as power is supplied to the actuator, the damper blade remains open.

In case of fire, the internal thermoelectric release mechanism closes the damper blade when at least one of the following is true:

- Temperature in the fire damper > 72 °C or > 95 °C
- Ambient temperature outside the release mechanism > 72°C.
- Interruption of the power supply (power off to close).

As standard, the spring return actuator is equipped with limit switches that can be used to indicate the damper blade position.

TROX smoke detector

The fire damper can be triggered by an external smoke detector, e.g. type RM-O-3-D or RM-O-VS-D. The smoke detector can be used for fire dampers with a spring return actuator.

4 Technical data

		FK-EU with fusible link Dimensions [mm] / weight [kg]																			
H	B	200	250	300	350	400	450	500	550	600	650	700	750	800	900	1000	1100	1200	1300	1400	1500
200	10	11	12	13	15	16	17	18	19	20	22	23	24	26	28	30	31	33	35	38	
250	11	12	13	15	16	17	18	19	21	22	24	25	26	28	30	32	34	36	38	41	
300	12	13	14	16	17	18	19	21	23	24	25	26	28	30	31	34	36	38	40	44	
350	13	15	16	17	18	20	22	23	25	26	27	29	30	32	34	37	39	41	44	48	
400	15	16	17	18	20	22	24	26	27	28	30	31	32	35	38	40	43	46	48	52	
450	16	17	18	20	22	24	26	28	29	29	31	32	34	37	40	44	47	49	52	57	
500	17	18	19	22	24	26	28	29	30	31	33	34	36	39	45	47	50	53	56	62	
550		21	23	26	28	29	30	32	34	35	37	38	43	47	50	54	57	60	67		
600		23	25	27	29	30	31	34	36	37	39	42	46	50	54	57	61	64	71		
650		24	26	28	29	31	33	35	37	40	42	45	49	53	57	61	64	68	75		
700		25	27	28	31	33	35	37	40	43	45	48	52	56	60	64	67	71	78		
750		26	28	30	32	34	37	39	42	45	48	50	55	59	63	66	69	73	81		
800		27	29	32	34	36	38	42	45	47	50	52	57	62	65	68	71	75	84		

FK-EU with spring return actuator: weight + 3 kg; FK-EU with spring return actuator (Ex): weight + 4 kg; FK-EU used as air transfer application: weight + 6 kg

Spring return actuator BLF		230-T TR	24-T-ST TR	Spring return actuator BF		230-T TR	24-T-ST TR
Supply voltage		230 V AC ±14 % 50/60 Hz	24 V AC ±20 % 50/60 Hz or 24 V DC -10 % / +20 %	Supply voltage		230 V AC ±14 % 50/60 Hz	24 V AC ±20 % 50/60 Hz or 24 V DC -10 % / +20 %
Power rating	Spring compression	6 W	5 W	Power rating	Spring compression	8 W	7 W
	Hold position	3 W	2.5 W		Hold position	3 W	2 W
Rating		7 VA		Rating		12.5 VA	10 VA
Running time	Motor / spring return	40 to 75 s / 20 s		Running time	Motor / spring return	approx. 140 s / approx. 16 s	
	Type of contact	2 change-over contacts			Type of contact	2 change-over contacts	
Limit switch	Switching voltage	5 – 120 V DC / 5 – 250 V AC		Limit switch	Switching voltage	5 – 120 V DC / 5 – 250 V AC	
	Switching current	1 mA – 3 A			Switching current	1 mA – 6 A	
	Contact resistance	< 100 mΩ			Contact resistance	< 100 mΩ	
IEC protection class		II	III	IEC protection class		II	III
Protection level		IP 54		Protection level		IP 54	
Storage temperature		-40 ... +50°C		Storage temperature		-40 ... +50°C	
Ambient temperature		-30 ... +50 °C ¹		Ambient temperature		-30 ... +50 °C ¹	
Ambient humidity		≤ 95 % RH, non-condensing		Ambient humidity		≤ 95 % RH, non-condensing	
Connecting cable	Actuator	1 m / 2 x 0.75 mm ²		Actuator		1 m / 2 x 0.75 mm ²	
	Limit switch	1 m / 6 x 0.75 mm ²		Limit switch		1 m / 6 x 0.75 mm ²	

Limit switch for fire damper with fusible link	
Connecting cable length / cross section	1 m / 3 x 0.34 mm ²
Protection level	IP 66
Type of contact	1 changeover contact, gold-plated
Max. switching current	0.5 A
Max. switching voltage	30 V DC, 250 V AC
Contact resistance	approx. 30 mΩ

¹ Up to 75 °C the safe position will definitely be reached.

5 Transport, storage, and packaging



Important!

Danger of injury from edges and sheet metal parts.

Always wear protective gloves when handling the unit.

Delivery check

Check delivered items immediately after arrival for transport damage and completeness. In case of any damage or an incomplete shipment, contact the shipping company and your supplier immediately.

A complete shipment includes:

- Fire damper
- Attachments/accessories, if any
- Operating manual (1 per shipment)

Transport on site

If possible, take the fire damper in its transport packaging up to the installation location.

Storage

If the fire damper has to be stored temporarily:

- Remove any plastic wrapping.
- Store the fire damper in a clean place, away from dust and pollution.
- Store the unit in a dry place and away from direct sunlight.
- Do not expose the fire damper (not even with its packaging) to the effects of weather.
- Do not store the fire damper below -40 °C or above 50 °C.

Packaging

Properly dispose of packaging material.

6 Installation

General installation information



Important!

Danger of injury from edges and sheet metal parts.
Always wear protective gloves when handling the unit.

The FKA-EU fire damper can be installed in various walls and ceilings. → P. 10

In case of wall installations, the fire damper can be installed such that the damper blade shaft is horizontal or vertical; the airflow direction is not critical.

Loads imposed on the casing may impair the function of the fire damper. The fire damper must hence be installed without exercising any tension.

Requirements

- Operating components, electric actuator, and inspection access must remain accessible for inspection and maintenance work.
- Perform a functional test of the fire damper before installation. → P. 44
- If the fire damper blade is open, it must be closed before installation. → P. 44
- To simplify connection of the duct, the fire damper should be extended with a suitable extension piece (see table).

Extension pieces

Length of fire damper	Thickness of wall/ceiling slab		
	≤ 115	> 115	> 240
375	-	x	x
500	-	-	x

Acceptable mortars for mortar-based installation

In case of mortar-based installation, the open spaces between the fire damper and the wall or ceiling slab must be closed off with mortar. Entrapped air is to be avoided. The mortar bed depth must be at least 100 mm.

The following mortars are acceptable:

- DIN 1053: Groups II, IIa, III, IIIa; fire protection mortar of groups II, III
- EN 998-2: Classes M 2.5 to M 10, or fire protection mortar of classes M 2.5 and M 10
- Equivalent mortars that meet the requirements of the above standards
- Gypsum mortar or concrete

Acceptable mineral wool as filling material

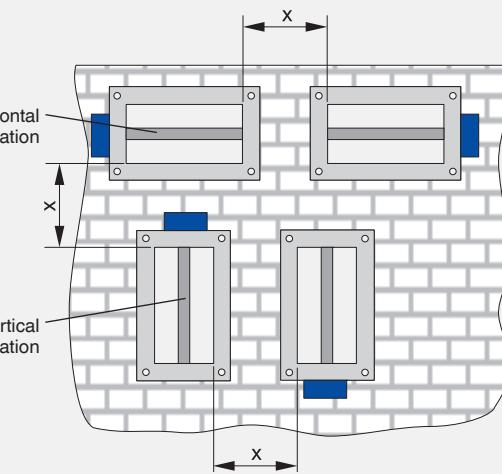
Mineral wool with gross density $\geq 80 \text{ kg/m}^3$, melting point $\geq 1000^\circ\text{C}$.

Acceptable fire batt system

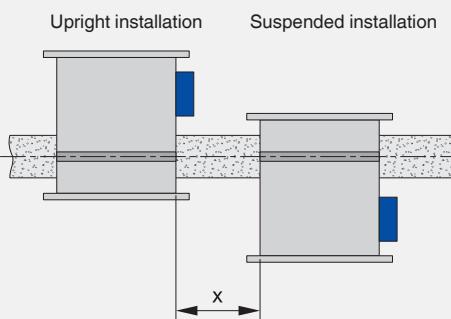
The following fire batt system is acceptable:

- **Hilti fire batt system**
 - Firestop board CFS-CT B 1S 140/50
 - Fire protection coating CFS-CT
 - Fire protection sealant CFS-S ACR

Wall installation

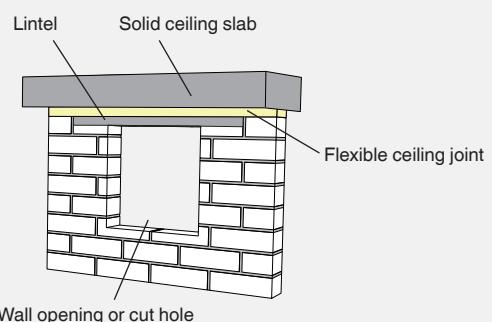


Ceiling installation



x = see corresponding installation details

Non-load-bearing solid walls with flexible ceiling joint



Fire dampers to be installed in non-load-bearing solid walls with flexible ceiling joint must be installed below concrete lintels.

6 Installation

General installation information

Overview of installation situations

Installation location	Construction and building material	Minim- um thick- ness [mm]	Class of performance EI TT (ve-ho, i ↔ o) S	Mortar-based installation Casing length [mm]		Dry mortarless installation Casing length [mm]		Installation details on page
				L = 375	L = 500	L = 375	L = 500	
Solid walls and ceiling slabs	Solid walls, gross density ≥ 500 kg/m ³	100	EI 90 S	N	N	–	E	12 – 16
			EI 120 S	–	–	–	W	17 – 18
	Solid ceiling slabs, gross density ≥ 600 kg/m ³	125	EI 90 S	N	N	–	–	19
			EI 120 S	–	–	–	W	21
On the face of solid walls and ceiling slabs	Solid walls, gross density ≥ 500 kg/m ³	100	EI 90 S	–	–	–	E	22
	Solid ceiling slabs, gross density ≥ 600 kg/m ³	125	EI 90 S	N	N	–	–	20
Adjacent to solid walls and ceiling slabs¹	Solid walls, gross density ≥ 500 kg/m ³	100	EI 90 S	–	–	–	E	23
	Solid ceiling slabs, gross density ≥ 600 kg/m ³	125	EI 90 S	N	N	–	–	20
Remote from solid walls and ceiling slabs¹	In fire-resistant ducting, remote from solid walls, gross density ≥ 500 kg/m ³	100	EI 90 S	–	–	–	E	24
	Solid ceiling slabs, gross density ≥ 600 kg/m ³	125	EI 90 S	N	N	–	–	20
Lightweight partition walls with metal support structure and cladding on both sides	Lightweight partition walls	100	EI 90 S	N	N	–	E	25 – 26
			EI 120 S ²	–	–	–	W	27 – 28
Lightweight partition walls with metal support structure and cladding on both sides, and with flexible ceiling joint	Lightweight partition walls	100 ³	EI 90 S	–	–	–	E	29 – 31
Lightweight partition walls with metal support structure and cladding on one side	Shaft walls	90	EI 90 S	–	–	–	E	32
Lightweight partition walls without metal support structure but with cladding on one side	Shaft walls	40	EI 90 S	–	–	–	E	33
Fire walls with metal support structure and cladding on both sides	Fire walls	115	EI 90 S	N	N	–	E	34 to 36

¹ Not approved for FK-EU as air transfer application

N = Mortar-based installation, E = Installation kit, W = Fire batt

² Installation into lightweight partition walls ≥ EI 120

³ Wall thickness ≤ 225 mm max. with 175 mm width of metal support structure

Installation in solid walls and ceiling slabs whose class of performance is lower than that of the fire damper is approved. In this case the class of performance of the wall or ceiling slab applies also to the fire damper.

6 Installation

General installation information

Assembling the installation kit with the fire damper

Two different installation kits are provided for the FK-EU fire damper, one for solid walls and one for lightweight partition walls.

The installation kits are assembled with the fire damper in the same manner.

To assemble the installation kit with the fire damper, proceed as follows: → top figure

- Place the fire damper with the flange of the operating side facing downwards onto a sheet of cardboard or a thin wooden board for protection.
- Place mineral wool [2] into the groove of the fire damper casing, near the damper blade.
- Arrange the installation kit [1] near the damper blade around the fire damper and secure it.
- Make drilled holes with a diameter of 3.5 mm for chipboard screws.
- Screw the installation kit together using chipboard screws [3].



Important!

If chipboard screws are screwed in without previous drilling, the installation kit could be damaged.

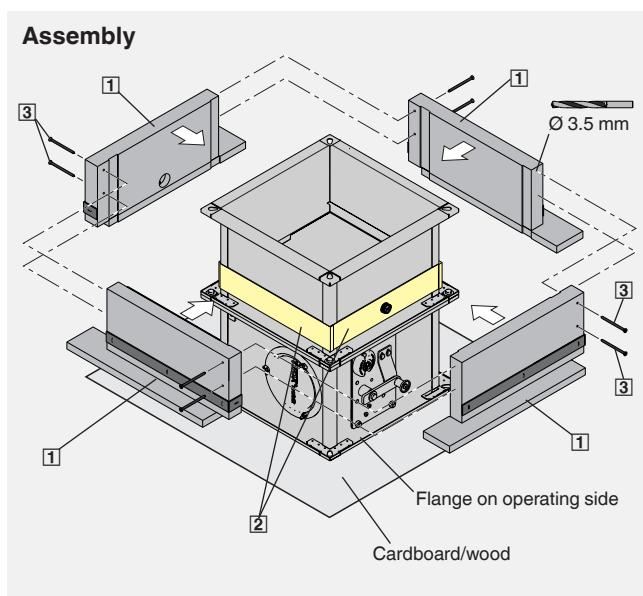
First drill holes with a diameter of 3.5 mm.

Brackets [4], dry wall screws [5], hexagon head screws [7], and an installation subframe [8] are required for wall installation. The assembly is described in detail for each installation application.

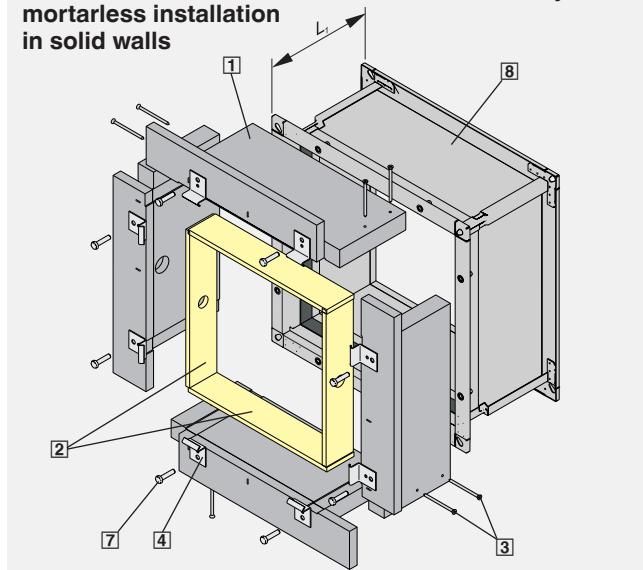
Installation subframe and installation kit for dry mortarless installation in solid walls (middle figure)

Supply package

Item	Qty.	Description
1	4	Installation kit (2x part B, 2x part H)
2	4	Mineral wool (2x part B, 2x part H)
3	8	Chipboard screws Ø 5x 80 mm
4	4 – 16	Brackets
7	4 – 16	Hexagon head screw M8 x 35
8	1	Installation subframe L ₁ = 115 or L ₁ = 240 mm



Installation subframe and installation kit for dry mortarless installation in solid walls

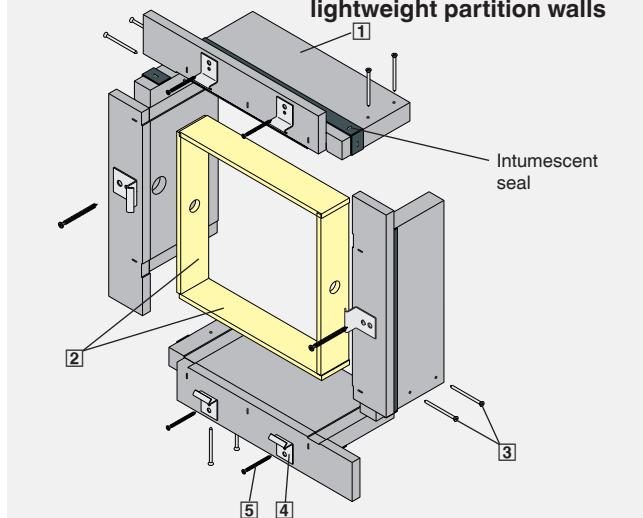


Installation kit for dry mortarless installation in lightweight partition walls (bottom figure)

Supply package

Item	Qty.	Description
1	4	Installation kit (2x part B, 2x part H)
2	4	Mineral wool (2x part B, 2x part H)
3	8	Chipboard screws Ø 5x 80 mm
4	6 – 8	Brackets
5	6 – 8	Dry wall screw 5.5 x 70 mm

Installation kit for dry mortarless installation in lightweight partition walls



6 Installation

Solid walls

Mortar-based installation

For mortar-based installation of fire dampers in solid walls the fire damper is concreted into the wall during construction or alternatively installed after construction with a perimeter mortar bed.

Requirements

- Solid walls or fire walls (if referred to as such) made of, for example, concrete, aerated concrete, masonry, or solid gypsum wallboards according to EN 12859 (without hollow spaces), gross density $\geq 500 \text{ kg/m}^3$, and a minimum thickness of 100 mm
- 75 mm minimum distance to load bearing structural elements
- 70 mm minimum distance between two fire dampers



Warning!

Contamination or damage will impair the function of the fire damper.

Protect the fire damper from contamination and damage:

- When installing the fire damper, place a prop near the damper blade to support and protect the sides of the casing.
- Cover the flange openings and release mechanism (e.g. with plastic foil) to protect them from mortar and dripping water.

Installation while erecting the wall

If the fire damper is installed as the wall is being erected, the perimeter gap »s« is not required.

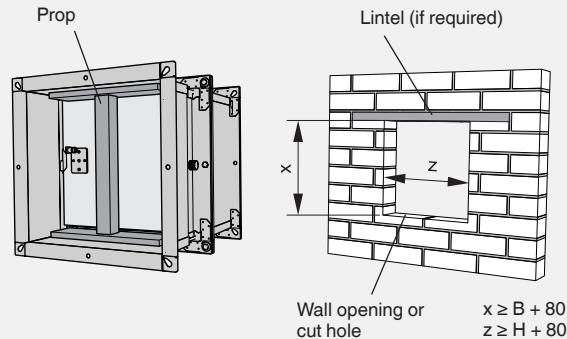
To install the fire damper, proceed as follows:

- Place the fire damper on a bed of mortar at the intended position and secure it.
- Make sure that the distance from the flange on the operating side to the wall is 260 mm.
- Protect the fire damper casing against deformation, e.g. by using a prop or installing a lintel.
- Depending on the length of the fire damper and the wall thickness (→ refer to table page 13), extend the fire damper on the installation side with an extension piece (attachment or supplied by others).
- Brick the fire damper into the wall with a perimeter bed of mortar.

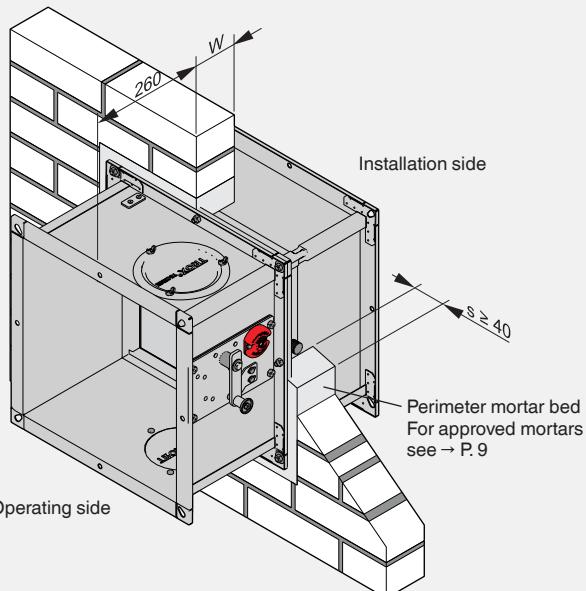
Installation after completing the wall

To install the fire damper into a completed wall, proceed as follows:

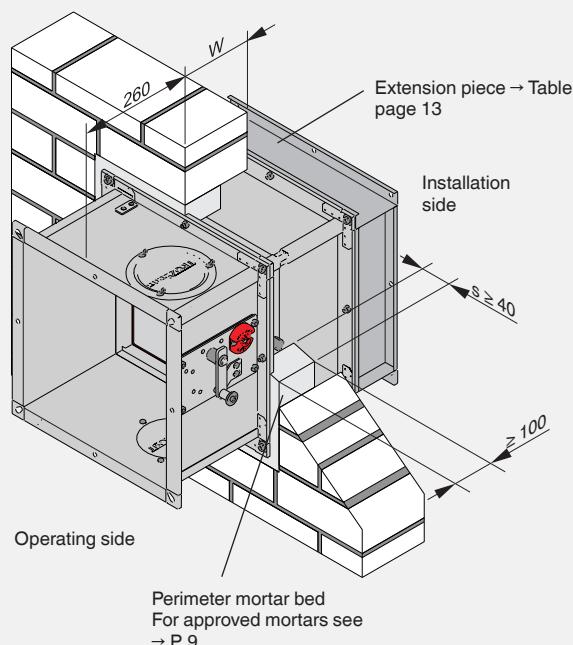
- Cut a hole.
- Push the fire damper into the wall opening and secure it, e.g. with wedges.
- Depending on the length of the fire damper and the wall thickness (→ refer to table page 19), extend the fire damper on the installation side with an extension piece (attachment or supplied by others).
- Close off the perimeter gap »s« with mortar. The mortar bed depth must be at least 100 mm.



W = 100



W > 100 mm



6 Installation

Solid walls

Mortar-based installation of multiple dampers flange to flange

Requirements

- Solid walls or fire walls (if referred to as such) made of, for example, concrete, aerated concrete, masonry, or solid gypsum wallboards according to EN 12859 (without hollow spaces), gross density $\geq 500 \text{ kg/m}^3$, and a minimum thickness of 100 mm
- 75 mm minimum distance to load bearing structural elements
- 70 mm minimum distance between two fire dampers

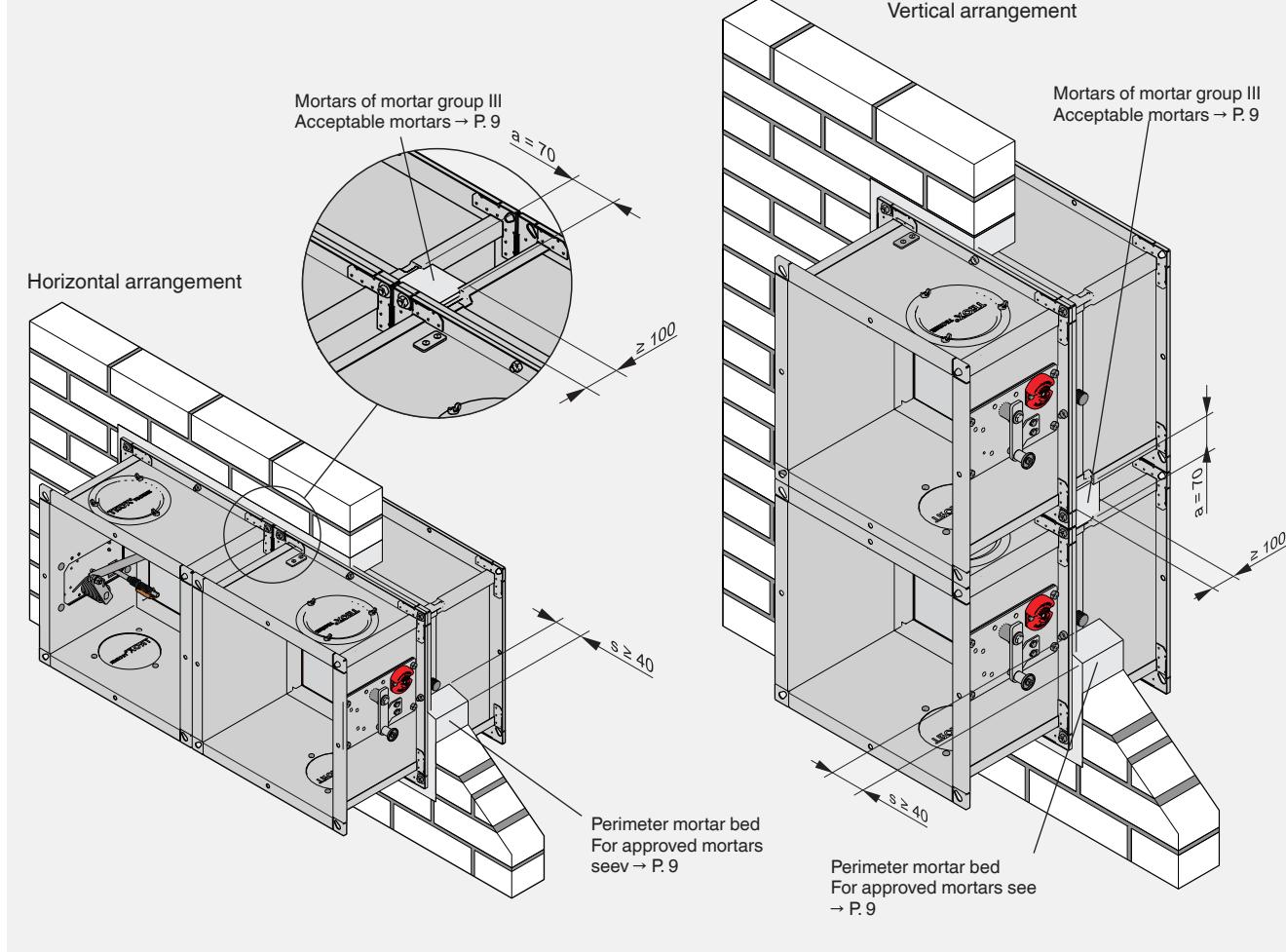
Installation

- An opening or a cut hole with a minimum width of $2xB + 150 \text{ mm}$ and a minimum height of $H + 80 \text{ mm}$, or with a minimum width of $B + 80 \text{ mm}$ and a minimum height of $2xH + 150 \text{ mm}$ is required; alternatively, the fire damper can be concreted into the wall during construction.
- Two fire dampers (and no more than two) may be arranged horizontally or vertically flange to flange.
- The release mechanisms or actuators can be at any position but must remain accessible.
- The perimeter gap »s« and gap »a« must be completely closed off with mortar → P. 9; mortar bed depth $\geq 100 \text{ mm}$.

- When filling gap »a«, shuttering may be used. The shuttering must be removed once the mortar has cured.
- The perimeter gap »s« can be reduced if the fire damper is concreted into a wall during construction.

Extension piece			
Length of fire damper	Wall thickness		
	≤ 115	> 115	> 240
375	-	x	x
500	-	-	x

Flange-to-flange installation – mortar infill of spaces



6 Installation

Solid walls

Mortar-based installation with partial mortaring

If an installation opening is difficult to access and if it is not possible to completely close off all gaps or hollow spaces with mortar, the fire damper may be installed without perimeter mortar infill.

Requirements

- Solid walls or fire walls (if referred to as such) made of, for example, concrete, aerated concrete, masonry, or solid gypsum wallboards according to EN 12859 (without hollow spaces), gross density $\geq 500 \text{ kg/m}^3$, and a minimum thickness of 100 mm

Installation

- The distance (x) between the fire damper and the adjacent wall or ceiling slab must not exceed 40 mm.
- For difficult to access installation gaps, place one or two U-profiles (depending on the size of the fire damper) in the middle of the installation gap on each side of the fire damper.

Completely close off the difficult to access installation gap, including the U-profile and up to the flange on the installation side, with mineral wool → P. 9.

- Completely close off the remaining gaps »s« (2-3) with mortar.

• The perimeter gap »s« can be reduced if the fire damper is concreted into a wall during construction.

- U-profile and mineral wool are not part of the supply package and must be provided by others.

U-profiles

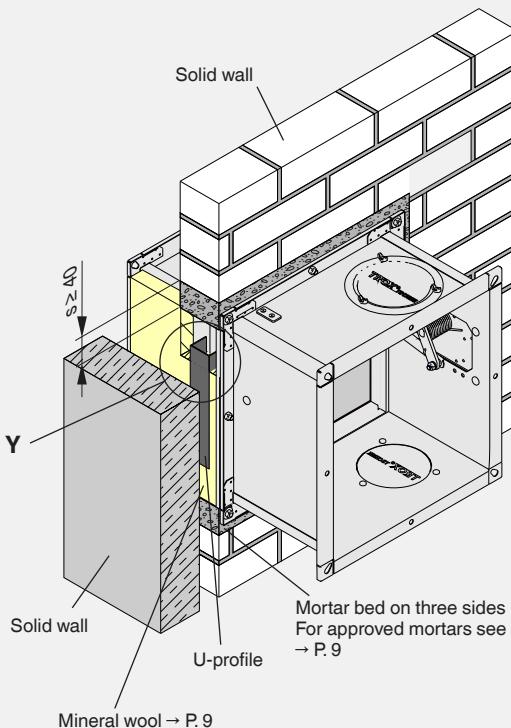
Side H	= 1 profile
Side B $\leq 1,000 \text{ mm}$	= 1 profile
Side B $> 1,000 \text{ mm}$	= 2 profiles

Shorter profiles may be used for fire dampers with a nominal size $< 400 \text{ mm}$.

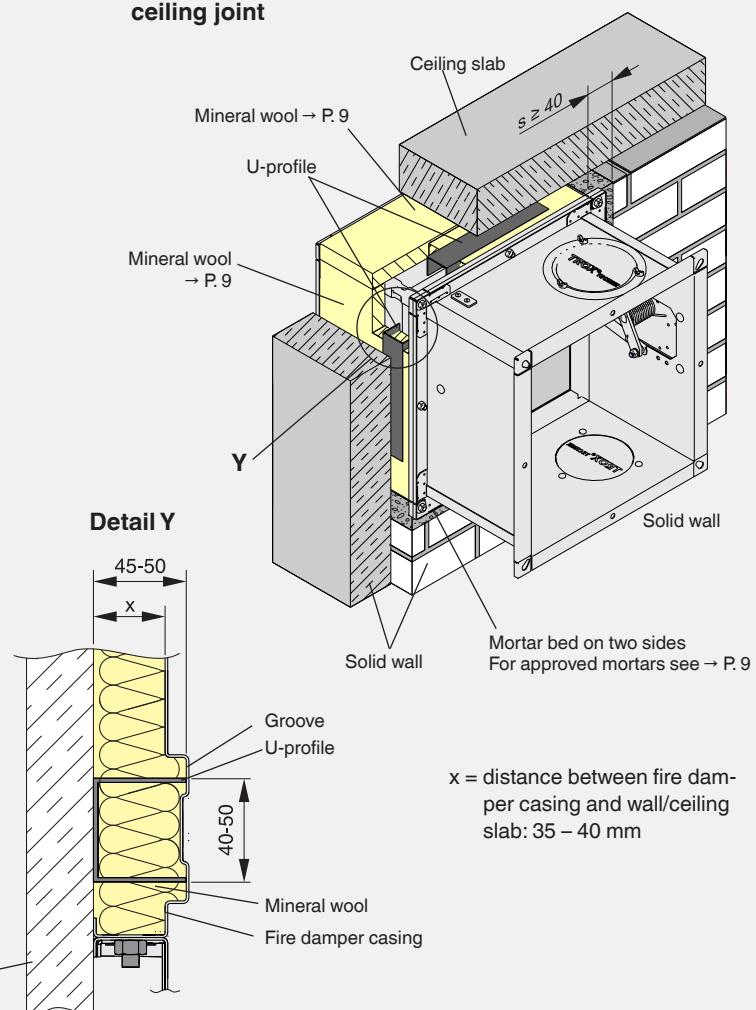
Dimensions of U-profiles

For B × H see detail Y, L = 400 mm, sheet thickness $\geq 1.25 \text{ mm}$, galvanised or coated steel

Difficult to access gap on one side, wall joint



Difficult to access gap on two sides, wall and ceiling joint



6 Installation

Solid walls

Dry mortarless installation with installation subframe and installation kit

If an installation subframe and installation kit are used, the installation subframe is mortared either into the wall during construction or into a cut hole created later.

Requirements

- Solid walls or fire walls (if referred to as such) made of, for example, concrete, aerated concrete, masonry, or solid gypsum wallboards according to EN 12859 (without hollow spaces), gross density $\geq 500 \text{ kg/m}^3$, and a minimum thickness of 100 mm
- Casing length $L = 500 \text{ mm}$
- 75 mm minimum distance to load bearing structural elements



Warning!

Contamination or damage will impair the function of the fire damper.

Make sure that the fire damper is not damaged during installation.

Installation of the installation subframe while erecting the wall

The installation subframe can be concreted into the wall during construction; in this case the perimeter gap »s« may be $\leq 40 \text{ mm}$.

To install the fire damper, proceed as follows:

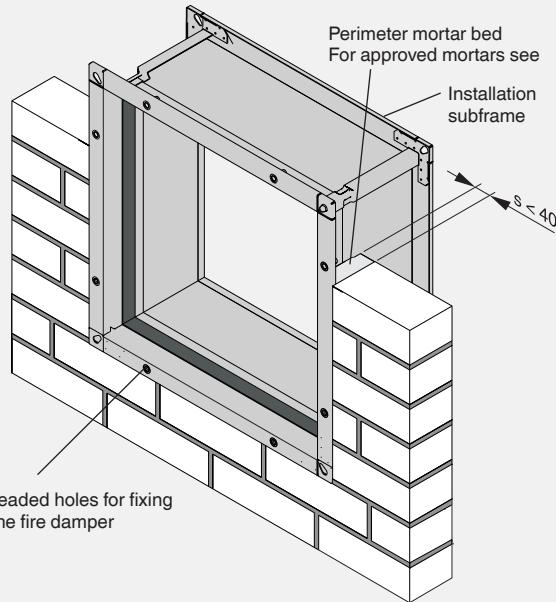
- Set the installation subframe onto a mortar bed at the intended position and fix it into place. For wall thicknesses $\geq 115 \text{ mm}$, use an installation subframe $L_1 = 240 \text{ mm}$.
- The subframe must be installed in such a way that the side on which the fire damper is to be mounted is flush with the wall.
- Concrete or brick the installation subframe into the wall and seal off any gaps with mortar.
- Clean the installation subframe and wash off any residual mortar with water.
- Assembling the fire damper with the installation subframe → P. 16

Installation of the installation subframe after completing the wall

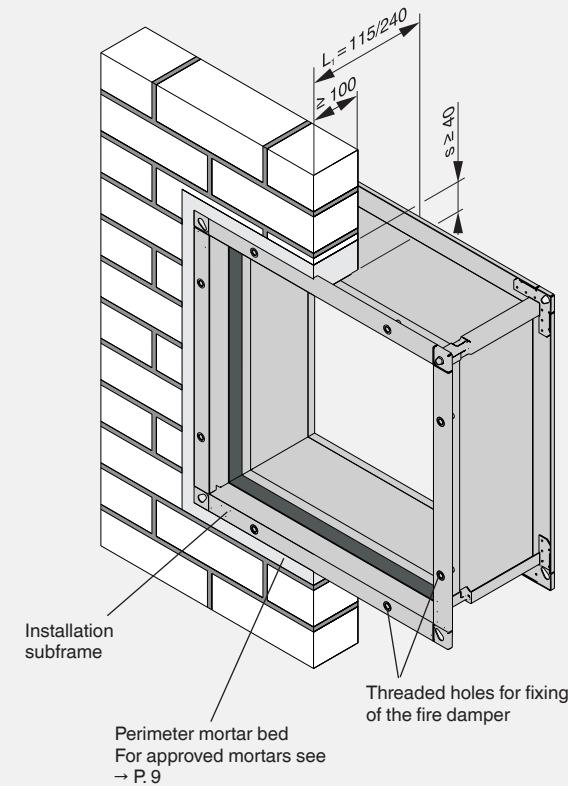
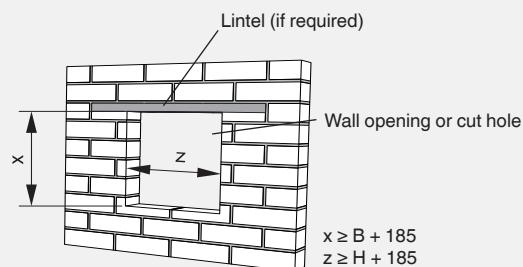
To install the fire damper into a completed wall, proceed as follows:

- Create a wall opening with minimum width $B + 185 \text{ mm}$ and minimum height $H + 185 \text{ mm}$.
- Push the installation subframe into the wall opening and secure it. For wall thicknesses $\geq 115 \text{ mm}$, use an installation subframe $L_1 = 240 \text{ mm}$.
- Close off the perimeter gap »s« with mortar. The mortar bed depth must be at least 100 mm.
- Clean the installation subframe and wash off any residual mortar with water.
- Assembling the fire damper with the installation subframe → P. 16

Installation while erecting the wall



Installation after completing the wall

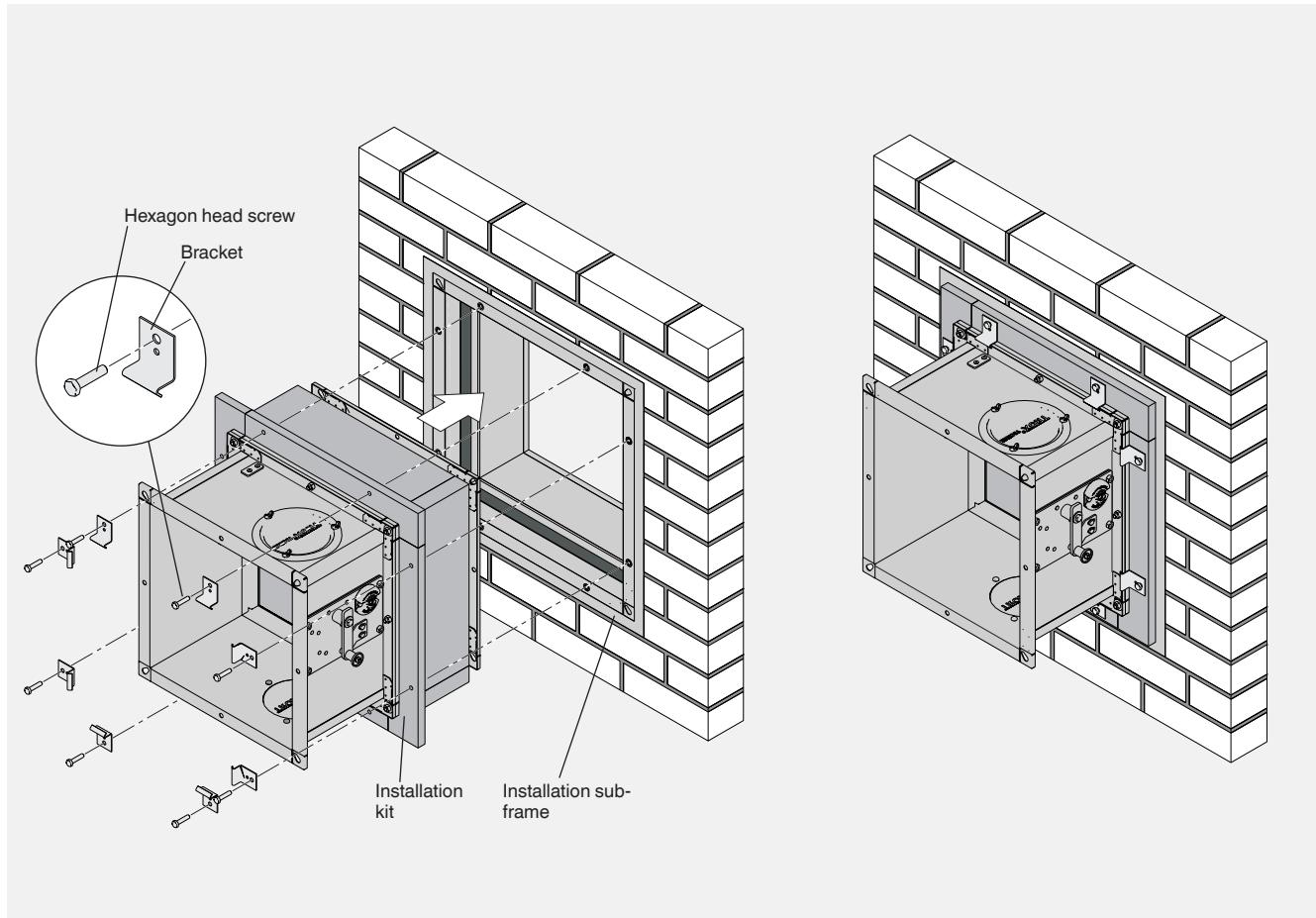


6 Installation

Solid walls

Assembling the fire damper with the installation subframe

- Assemble the installation kit with the fire damper.
→ P. 11
- For wall thicknesses > 240 mm, extend the fire damper with an extension piece (attachment or supplied by others) on the installation side.
- Push the fire damper with installation kit into the installation subframe (the mortar on the installation subframe must have cured).
- Screw the fire damper to the installation subframe using brackets and hexagon head screws.



6 Installation

Solid walls

Fire batt – Combinations of width and height up to $B \times H = 800 \text{ mm} \times 400 \text{ mm}$

Dry mortarless installation with fire batt

Installation of the fire damper in solid walls is approved with a fire batt. Acceptable fire batt systems → P. 9

Requirements

- Solid walls or fire walls (if referred to as such) made of, for example, concrete, aerated concrete, masonry, or solid gypsum wallboards according to EN 12859 (without hollow spaces), gross density $\geq 500 \text{ kg/m}^3$, and a minimum thickness of 100 mm
- 200 mm minimum distance between two fire dampers but dependent on the selected gap width (50...400 mm)
- 75 mm minimum distance to load bearing structural elements



Warning!

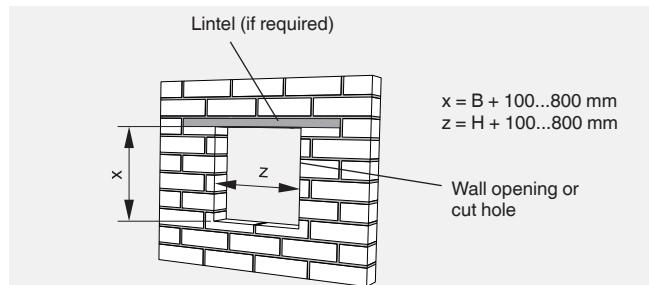
Contamination or damage will impair the function of the fire damper.

Protect the fire damper from contamination and damage.

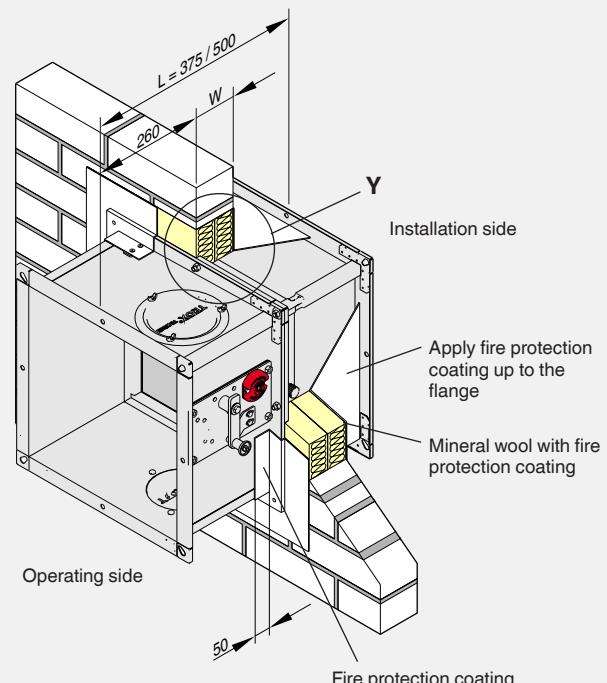
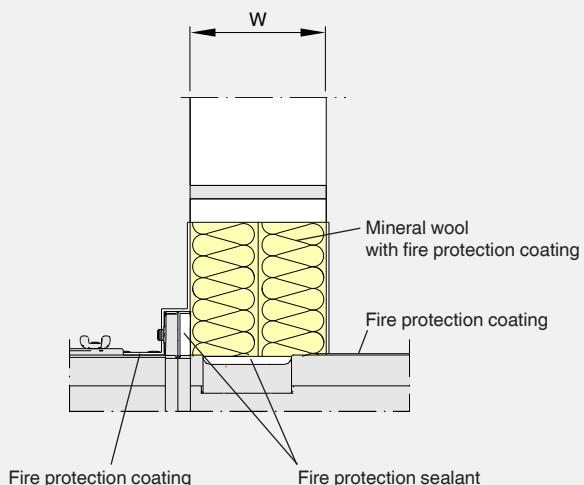
- The actuator and release unit must not be coated.

Installation

- An opening or a cut hole with a minimum width $B + 100\ldots800 \text{ mm}$ and a minimum height $H + 100\ldots800 \text{ mm}$ is required; 400 mm maximum distance between the fire damper and the wall opening
- Push the fire damper into the wall opening and fix it with threaded rods. → P. 37
- Depending on the length of the fire damper and the wall thickness (refer to table below), extend the fire damper on the installation side with an extension piece (attachment or supplied by others).
- Completely close off the perimeter gap between the fire damper and the wall or ceiling slab with two layers of fire batt (boards made of mineral wool, coated), $\geq 140 \text{ kg/m}^3$. Apply fire protection sealant to the cut faces of the mineral wool boards and fit them tightly into the opening. Seal any gaps between the mineral wool boards and the trim panels, gaps between the cut faces of cut-to-size pieces, and gaps between boards and the fire damper by applying fire protection sealant.
- Apply a fire protection coat, at least 2.5 mm thick, to the fire damper casing perimeter and to the mineral wool boards on both sides of the wall or ceiling slab. Apply the coating on the installation side up to the flange.
- The actuator and release unit must not be coated.



Detail Y



Extension pieces

Length of fire damper	Thickness of wall/ceiling slab	
	≥ 100	> 240
375	x	x
500	-	x

6 Installation

Solid walls

Fire batt – Combinations of width and height from $B \times H = 801 \text{ mm} \times 401 \text{ mm}$

Dry mortarless installation with fire batt

Installation of the fire damper in solid walls is approved with a fire batt. Acceptable fire batt systems → P. 9

Requirements

- Solid walls or fire walls (if referred to as such) made of, for example, concrete, aerated concrete, masonry, or solid gypsum wallboards according to EN 12859 (without hollow spaces), gross density $\geq 500 \text{ kg/m}^3$, and a minimum thickness of 100 mm
- 200 mm minimum distance between two fire dampers but dependent on the selected gap width (50...400 mm)
- 75 mm minimum distance to load bearing structural elements



Warning!

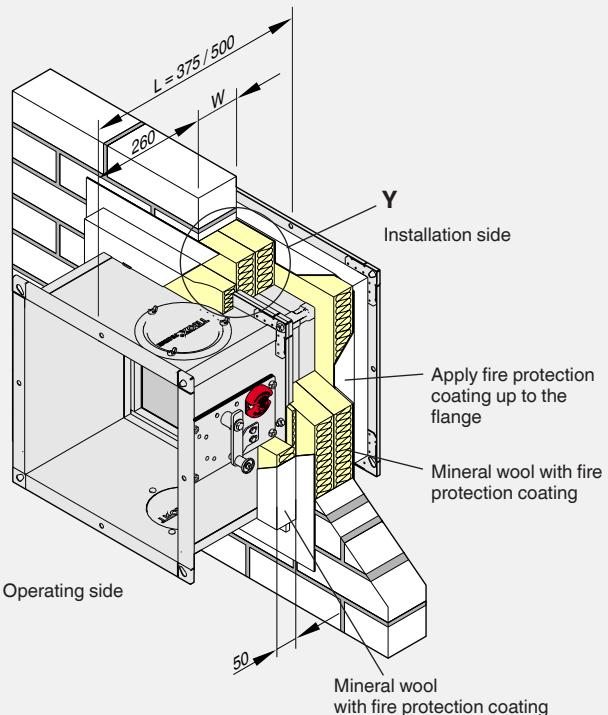
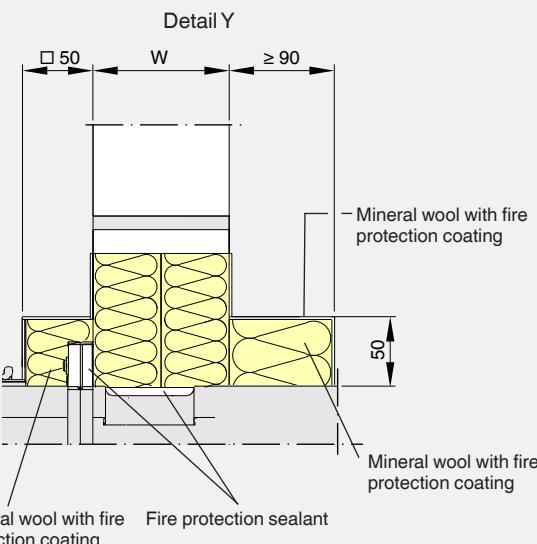
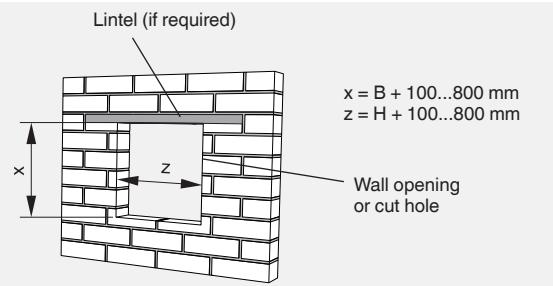
Contamination or damage will impair the function of the fire damper.

Protect the fire damper from contamination and damage.

- The actuator and release unit must not be coated.

Installation

- An opening or a cut hole with a minimum width $B + 100\ldots800 \text{ mm}$ and a minimum height $H + 100\ldots800 \text{ mm}$ is required; 400 mm maximum distance between the fire damper and the wall opening
- Push the fire damper into the wall opening and fix it with threaded rods. → P. 37
- Depending on the length of the fire damper and the wall thickness (→ P. 17 refer to table), extend the fire damper on the installation side with an extension piece (attachment or supplied by others).
- Completely close off the perimeter gap between the fire damper and the wall or ceiling slab with two layers of fire batt (boards made of mineral wool, coated), $\geq 140 \text{ kg/m}^3$. Apply fire protection sealant to the cut faces of the mineral wool boards and fit them tightly into the opening. Seal any gaps between the mineral wool boards and the trim panels, gaps between the cut faces of cut-to-size pieces, and gaps between boards and the fire damper by applying fire protection sealant.
- Additionally provide on both sides of the wall or ceiling slab and on three sides of the damper a frame of mineral wool $\geq 140 \text{ kg/m}^3$. Affix the mineral wool above and to the left and right of the fire damper. Do not cover the actuator and release unit.
- Apply a fire protection coat, at least 2.5 mm thick, to the fire damper casing perimeter and to the mineral wool boards on both sides of the wall or ceiling slab. Apply the coating on the installation side up to the flange.
- The actuator and release unit must not be coated.



6 Installation

Solid ceiling slabs

Mortar-based installation

Fire dampers are concreted in during the construction of the ceiling or installed using a perimeter mortar-mix after the completion of the ceiling slab.

Requirements

- Solid ceiling slabs made of concrete or aerated concrete, gross density $\geq 600 \text{ kg/m}^3$ and $D \geq 125 \text{ mm}$
- 40 mm minimum distance to load bearing structural elements.
- 100 mm minimum distance between two fire dampers



Warning!

Contamination or damage will impair the function of the fire damper.

Protect the fire damper from contamination and damage:

- When installing the fire damper, place a prop near the damper blade to support and protect the sides of the casing.
- Cover the flange openings and release mechanism (e.g. with plastic foil) to protect them from mortar and dripping water.

Installation while completing the ceiling slab

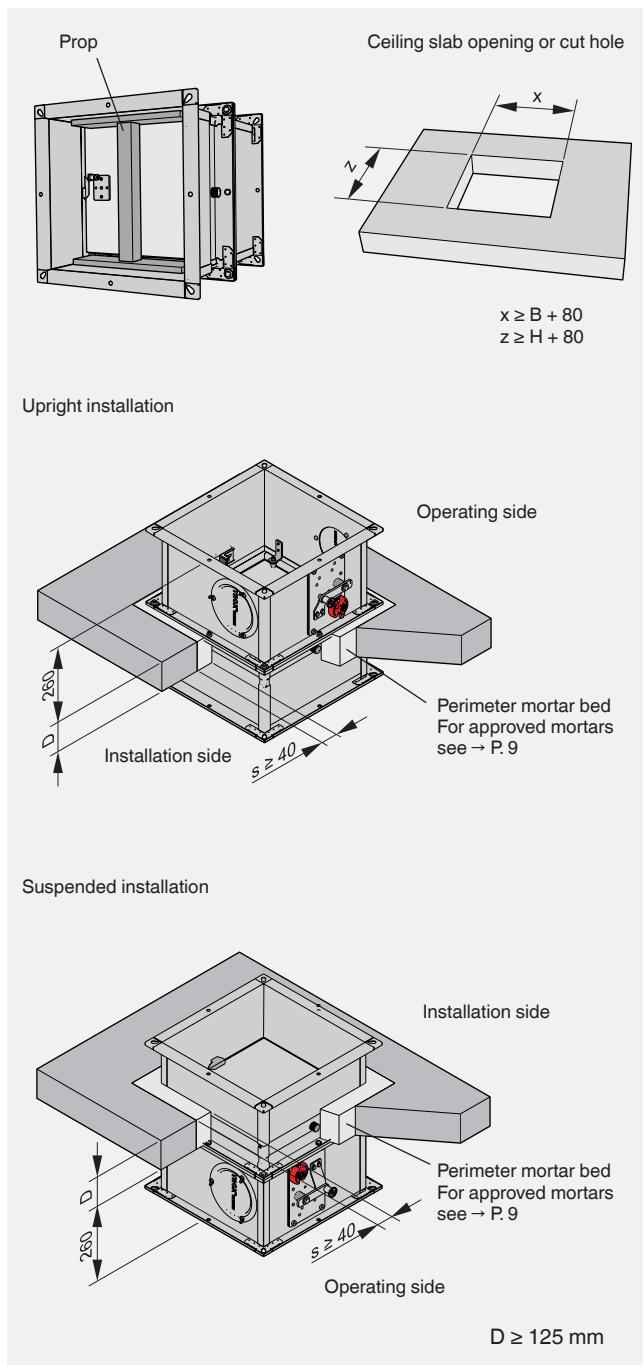
If the fire damper is installed as the ceiling slab is being completed, the perimeter gap »s« is not required.

- Place the fire damper in the installation location and secure it.
- Protect the fire damper casing against deformation, e.g. by using a prop.
- Protect the inside of damper and the operating components/actuator, e.g. with plastic foil.
- Depending on the length of the fire damper and the ceiling slab thickness (refer to table below), extend the fire damper on the installation side with an extension piece (attachment or supplied by others).
- Cast the concrete around the fire damper.

Installation after completing the ceiling slab

To install the fire damper into a completed ceiling slab, proceed as follows:

- Cut a hole.
- Push the fire damper into the opening in the ceiling slab and secure it, e.g. with wedges.
- Depending on the length of the fire damper and the ceiling slab thickness (refer to table below), extend the fire damper on the installation side with an extension piece (attachment or supplied by others).
- Close off the perimeter gap »s« with mortar.
The mortar bed depth must be at least 100 mm.



Extension pieces		
Length of fire damper	Ceiling thickness	
	≥ 125	> 240
375	x	x
500	-	x

6 Installation

Solid ceiling slabs

Mortar-based installation on the face of solid ceiling slabs

The installation of fire dampers above solid ceiling slabs and flange to flange with an existing fire damper or with ducting is approved but requires a concrete encasement.

Requirements

- Solid ceiling slabs made of concrete or aerated concrete, gross density $\geq 600 \text{ kg/m}^3$ and $W \geq 125 \text{ mm}$
- 40 mm minimum distance to load bearing structural elements.
- 100 mm minimum distance between two fire dampers



Warning!

Contamination or damage will impair the function of the fire damper.

Protect the fire damper from contamination and damage:

- When installing the fire damper, place a prop near the damper blade to support and protect the sides of the casing.
- Cover the flange openings and release mechanism (e.g. with plastic foil) to protect them from mortar and dripping water.



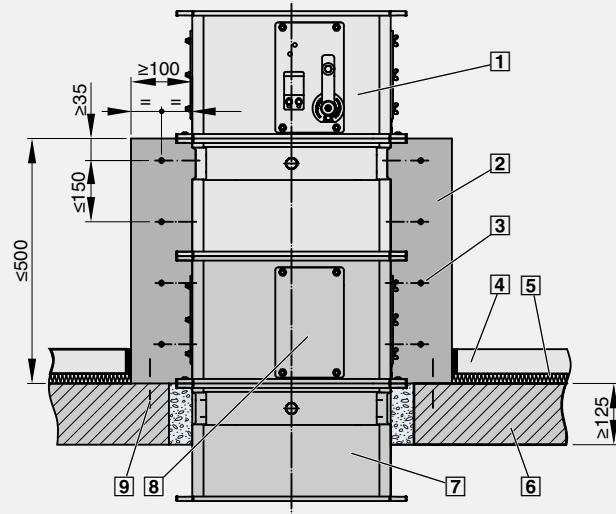
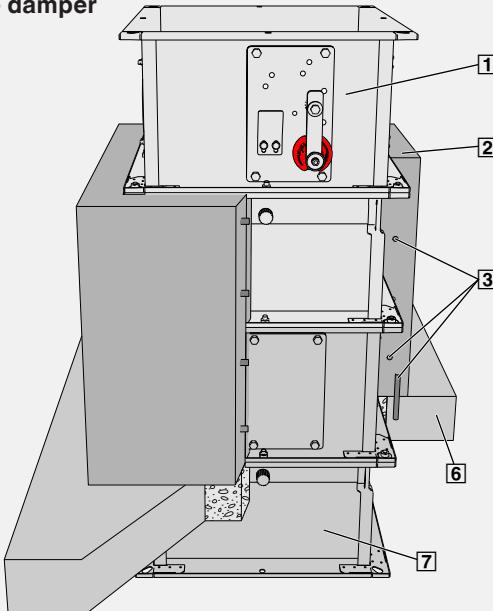
Note

If the fire damper is to be installed flange to flange with an existing but dysfunctional fire damper, all interior parts of the dysfunctional fire damper, e.g. damper blade, travel stop and operating elements, must be removed. Tightly seal any opening in the old fire damper casing with a sheet metal plate [8].

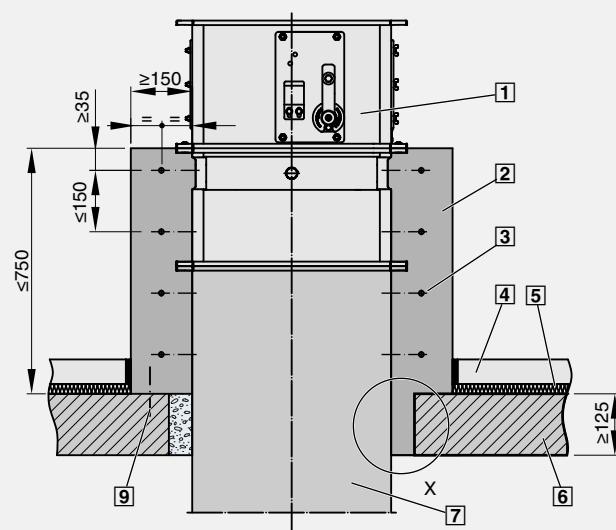
Installation

- Screw the new fire damper [1] to the old fire damper [7] or to the ducting [10]; if necessary, attach a flange to the ducting.
- Create a connection with the ceiling by inserting reinforcing bars [9].
If the concrete encasement is cast into the ceiling slab, the connection with the ceiling slab is not required (see Detail X).
- Build the shuttering for the concrete encasement [2].
- Insert reinforcing elements [3] and fasten them.
- Pour the concrete.

FK-EU installed flange to flange with existing fire damper



FK-EU flange to flange with ducting



[1] FK-EU fire damper

[2] Concrete encasement

[3] Perimeter reinforcing bars, $\varnothing \geq 8 \text{ mm}$, or steel fabric; other types of reinforcement require structural verification by others

[4] Floor layer, e.g. screed

[5] Insulation

[6] Solid ceiling slab

[7] Duct or existing fire damper (without damper blade)

[8] Sheet metal plate

[9] Ceiling joint, reinforcing bars, $\varnothing \geq 10 \text{ mm}$, distance $\leq 250 \text{ mm}$

6 Installation

Solid ceiling slabs

Fire batt

Dry mortarless installation with fire batt

Dry mortarless installation of the fire damper in solid ceiling slabs is approved with a fire batt. Acceptable fire batt systems → P. 9

Requirements

- Solid ceiling slabs made of concrete or aerated concrete, gross density $\geq 600 \text{ kg/m}^3$ and $D \geq 150 \text{ mm}$
- 200 mm minimum distance between two fire dampers but dependent on the selected gap width (50...400 mm)
- 75 mm minimum distance between the fire damper and the adjacent wall or ceiling slab.



Warning!

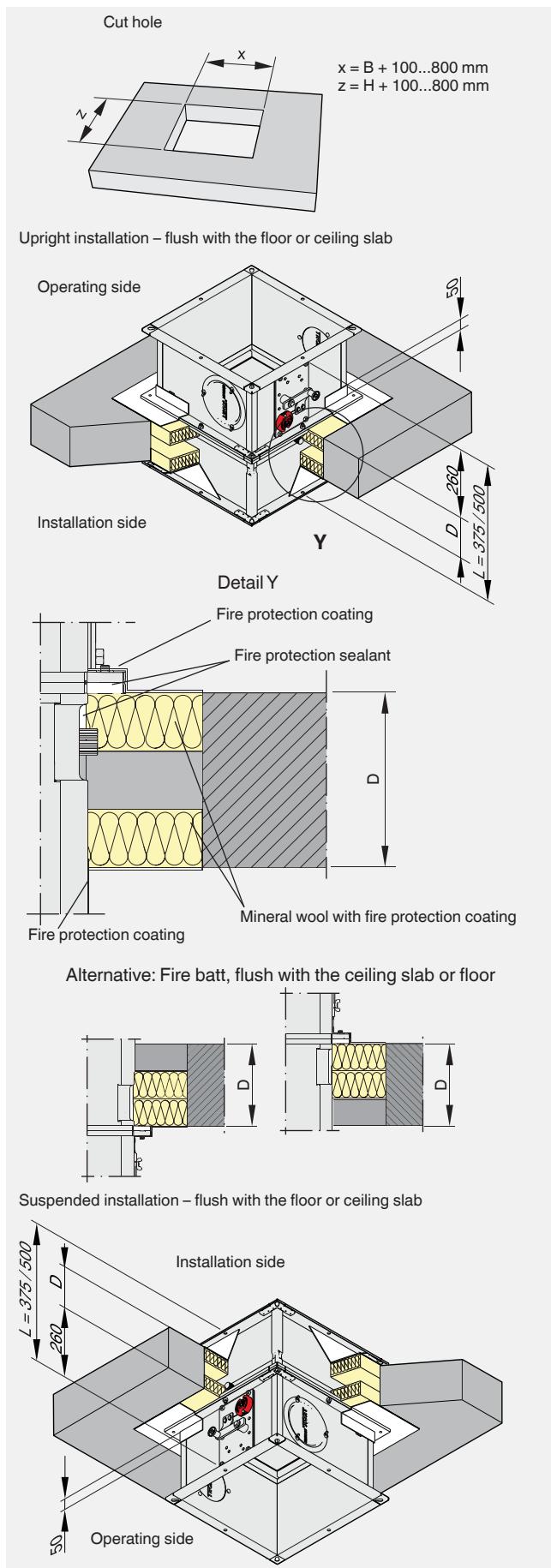
Contamination or damage will impair the function of the fire damper.

Protect the fire damper from contamination and damage.

- The actuator and release unit must not be coated.

Installation

- An opening or a cut hole with a minimum width $B + 100\ldots800 \text{ mm}$ and a minimum height $H + 100\ldots800 \text{ mm}$ is required; 400 mm maximum distance between the fire damper and the wall opening.
- Push the fire damper into the ceiling slab opening and fix it with threaded rods. → P. 38
- Depending on the length of the fire damper and the wall thickness (→ P. 17 refer to table), extend the fire damper on the installation side with an extension piece (attachment or supplied by others).
- Completely close off the perimeter gap between the fire damper and the wall or ceiling slab with two layers of fire batt (boards made of mineral wool, coated), $\geq 140 \text{ kg/m}^3$. Apply fire protection sealant to the cut faces of the mineral wool boards and fit them tightly into the opening. Seal any gaps between the mineral wool boards and the trim panels, gaps between the cut faces of cut-to-size pieces, and gaps between boards and the fire damper by applying fire protection sealant.
- Apply a fire protection coat, at least 2.5 mm thick, to the fire damper casing perimeter and to the mineral wool boards on both sides of the wall or ceiling slab. Apply the coating on the installation side up to the flange.
- The actuator and release unit must not be coated.



6 Installation

On the face of solid walls

Installation of the fire damper on the face of a solid wall requires an installation subframe and the WA installation kit.

Requirements

- Solid walls or fire walls (if referred to as such) made of, for example, concrete, aerated concrete, masonry, or solid gypsum wallboards according to EN 12859 (without hollow spaces), gross density $\geq 500 \text{ kg/m}^3$, and a minimum thickness of 100 mm
- Old fire damper or duct that has been mortared in
- Casing length L = 500 mm
- 300 mm minimum distance between two fire dampers
- 150 mm minimum distance to load bearing structural elements

Installation

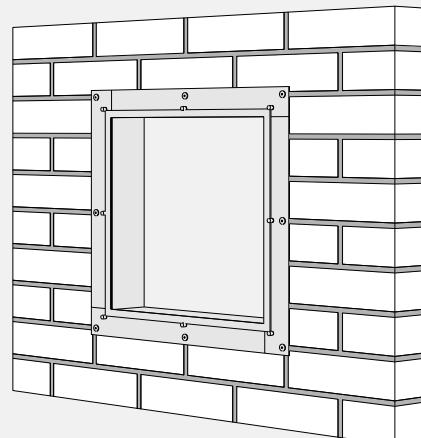
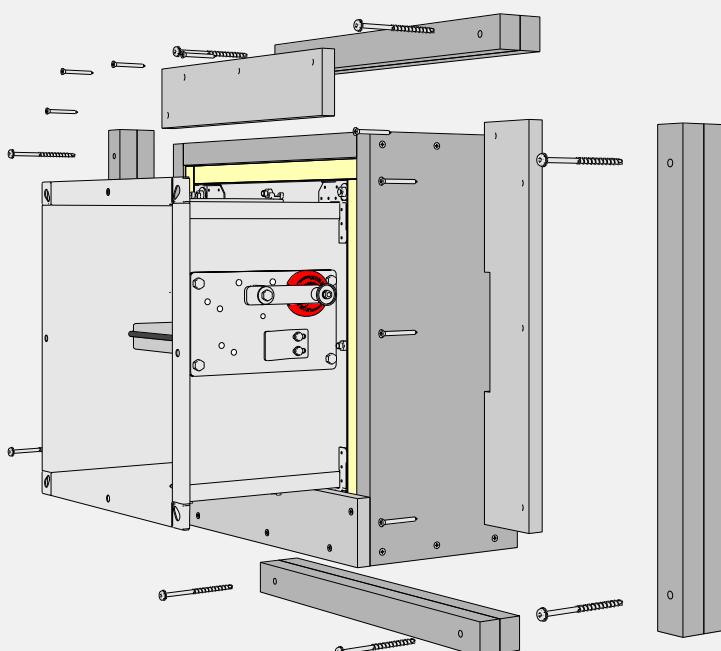
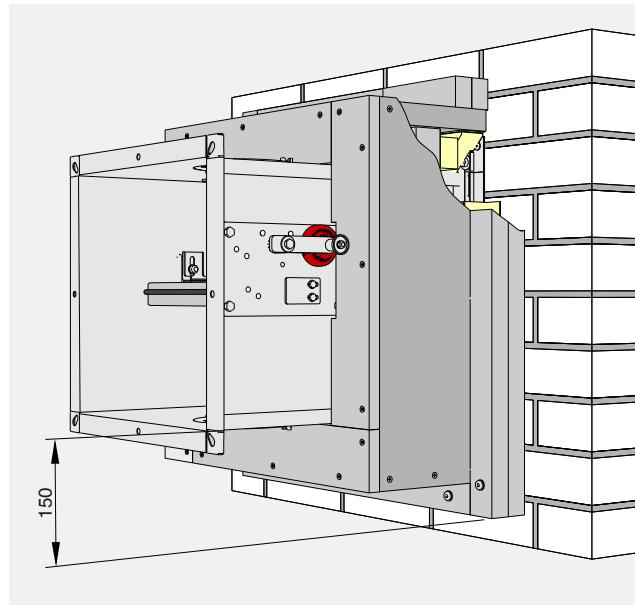
Install the fire damper according to the installation manual for the WA installation kit.

Enough clear space is required to assemble the installation kit with the fire damper:

- 400 mm to the left and to the right of the fire damper
- 200 mm above and below the fire damper

Note

- No suspension is required for the fire damper.



6 Installation

Adjacent to solid walls

For installation of the fire damper adjacent to a solid wall, the fire damper is connected to a duct no further than 260 mm from the solid wall and is clad with the WV installation kit.

Requirements

- Solid walls or fire walls (if referred to as such) made of, for example, concrete, aerated concrete, masonry, or solid gypsum wallboards according to EN 12859 (without hollow spaces), gross density $\geq 500 \text{ kg/m}^3$, and a minimum thickness of 100 mm
- Casing length L = 500 mm
- 300 mm minimum distance between two fire dampers
- 150 mm minimum distance to load bearing structural elements
- Duct, no longer than 260 mm and without any openings, with perimeter mortar infill, or an existing dysfunctional fire damper with perimeter mortar infill

Installation

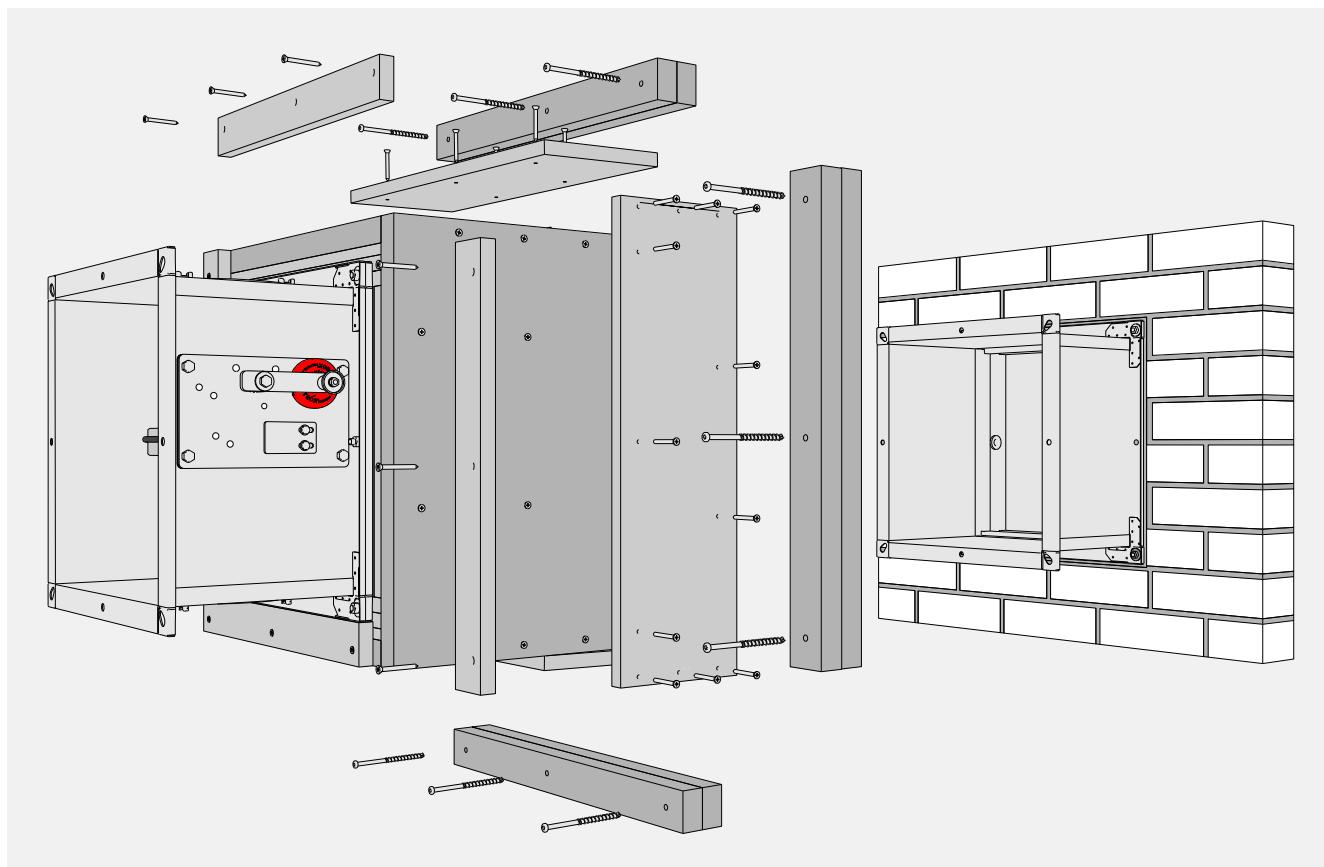
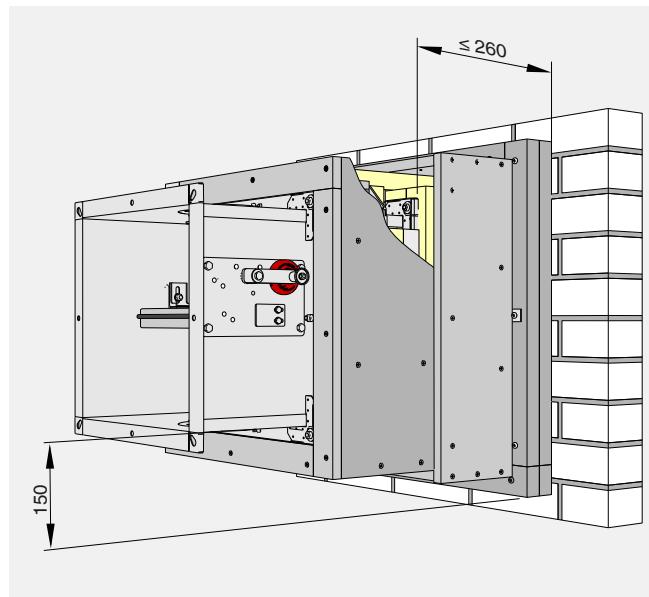
Install the fire damper according to the installation manual for the WV installation kit.

Enough clear space is required to assemble the installation kit with the fire damper:

- 400 mm to the left and to the right of the fire damper
- 400 mm above and below the fire damper

Note

- No suspension is required for the fire damper.



6 Installation

Remote from solid walls

For installation of the fire damper remote from a solid wall, the fire damper is connected to a duct remote from the solid wall and is clad with the WE installation kit.

The fire damper must be installed only in horizontal ducts.

Requirements

- Sheet steel ducting with fire resistant cladding L90
- No openings in the insulated ducts between the fire damper and the solid wall
- Casing length L = 500 mm
- 350 mm minimum distance between two fire dampers
- 175 mm minimum distance to load bearing structural elements

Installation

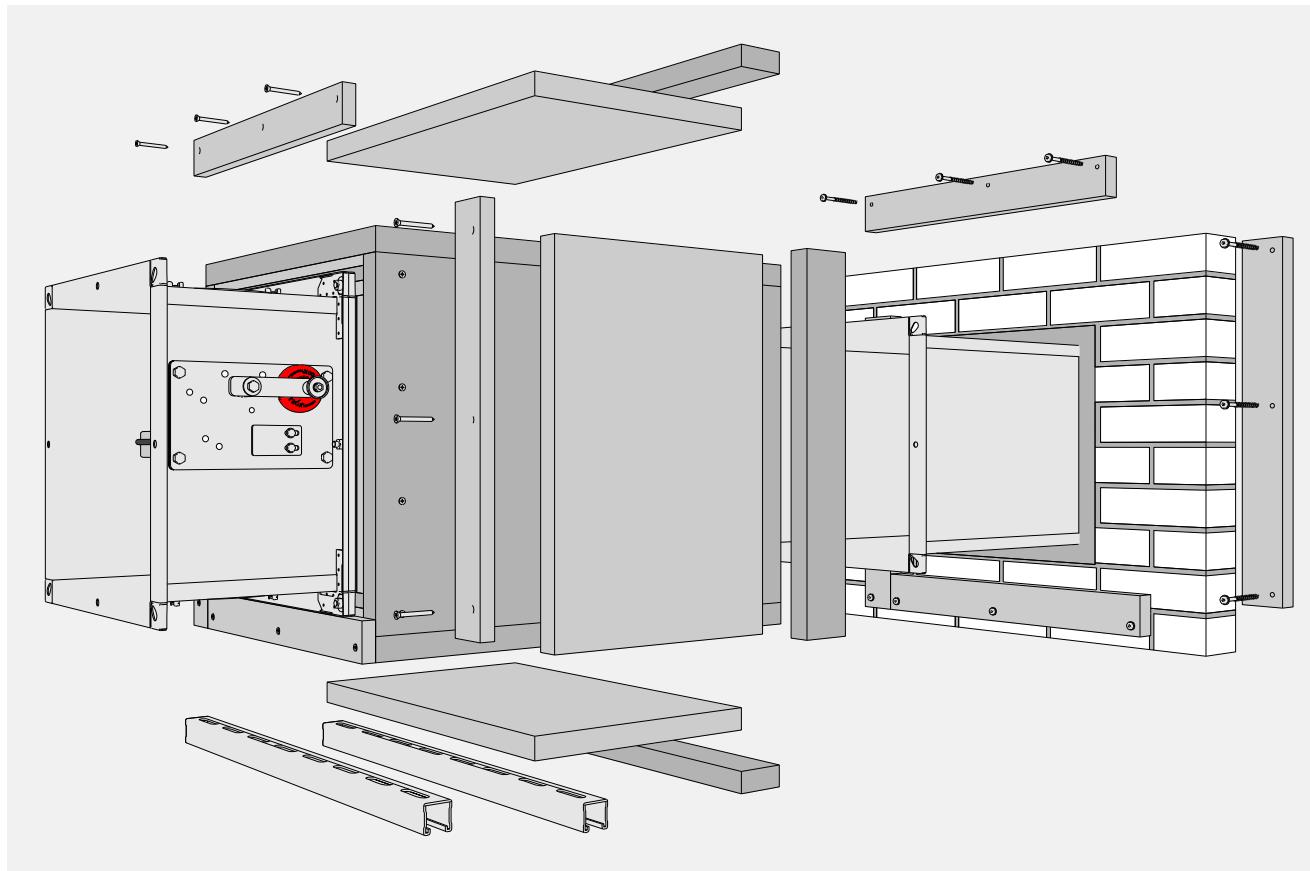
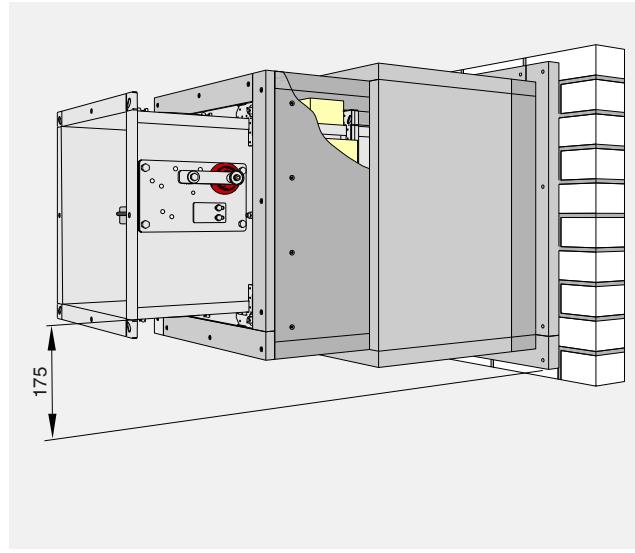
Install the fire damper according to the installation manual for the WE installation kit.

Enough clear space is required to assemble the installation kit with the fire damper:

- 400 mm to the left and to the right of the fire damper
- 400 mm above and below the fire damper

Note

- Fire damper and ducting must be suspended → P. 40
- Further components required for installation are to be provided by others.



6 Installation

Lightweight partition walls with metal support structure and cladding on both sides

Mortar-based installation

Fire dampers can be installed into lightweight partition walls using a perimeter mortar mix.

Requirements

- Lightweight partition walls with a metal support structure and cladding on both sides, with European classification to EN 13501-2 or comparable national classification
- Cladding made of gypsum bonded or cement bonded panel materials and a minimum thickness of 100 mm
- Additional layers of cladding or double stud systems are approved
- 75 mm minimum distance to load bearing structural elements
- 200 mm minimum distance between two fire dampers



Warning!

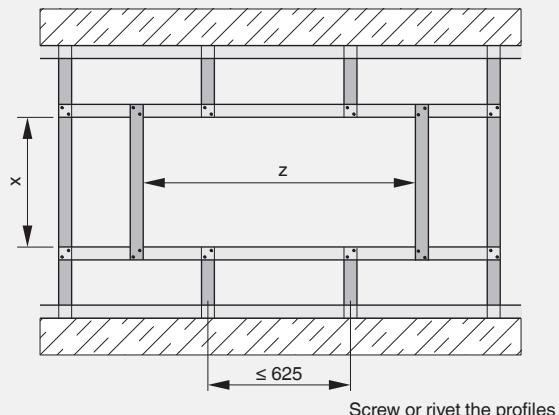
Contamination or damage will impair the function of the fire damper.

Protect the fire damper from contamination and damage.

To install the fire damper, proceed as follows:

- Erect the metal support structure according to the manufacturer's instructions. Provide the installation opening with support profiles as shown in the figure opposite.
- Mount the wall cladding.
- Insert trim panels (optional).
- Push the fire damper into the wall opening. Make sure that the distance from the flange on the operating side to the wall is 260 mm.
- Secure the fire damper in place.
- Depending on the length of the fire damper and the wall thickness (refer to table below), extend the fire damper on the installation side with an extension piece (attachment or supplied by others).
- The perimeter gap »s« must be completely closed off with mortar. If trim panels are used, a mortar bed depth of 100 mm suffices.

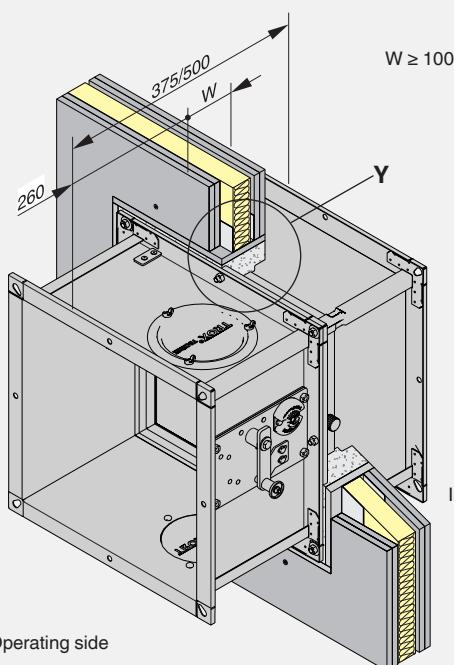
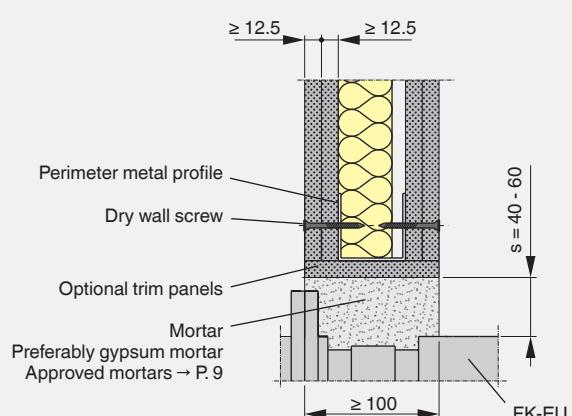
Metal support structure



$x = H + 80 - 120 \text{ mm (+ trim panel thickness)}$

$z = B + 80 - 120 \text{ mm (+ trim panel thickness)}$

Detail Y



Extension pieces

Length of fire damper	Wall thickness		
	≤ 115	> 115	> 240
375	-	x	x
500	-	-	x

6 Installation

Lightweight partition walls with metal support structure and cladding on both sides

Dry mortarless installation with installation kit

Fire dampers with an installation kit are used for installation in lightweight partition walls without a perimeter mortar infill.

Requirements

- Lightweight partition walls with a metal support structure and cladding on both sides, with European classification to EN 13501-2 or comparable national classification
- Cladding made of gypsum bonded or cement bonded panel materials and a minimum thickness of 100 mm
- Additional layers of cladding or double stud systems are approved
- Casing length L = 500 mm
- 75 mm minimum distance to load bearing structural elements
- 200 mm minimum distance between two fire dampers



Warning!

Contamination or damage will impair the function of the fire damper.

Protect the fire damper from contamination and damage.

To install the fire damper, proceed as follows:

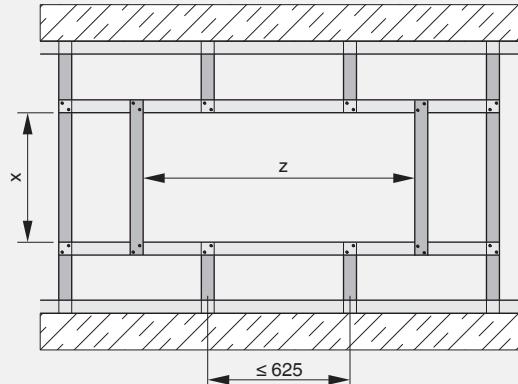
- Erect the metal support structure according to the manufacturer's instructions. Provide the installation opening with support profiles as shown in the figure opposite.
- Mount the wall cladding.
- Assemble the installation kit with the fire damper.
→ P. 11
- Push the fire damper into the wall opening until the installation kit is flush with the wall.
- Drill Ø 4 mm holes for dry wall screws into the installation kit.
- Attach the fire damper with brackets and dry wall screws to the metal support structure:
 - Side H: One bracket and one dry wall screw on each side.
 - $B \leq 800$ mm: Two brackets and dry wall screws on each side.
 - $B > 800$ mm:
Three brackets and dry wall screws on each side B.



Note

On each side B, the distances between the fastening points should be the same. The dry wall screws must be long enough to ensure fastening to the metal support structure.

Metal support structure

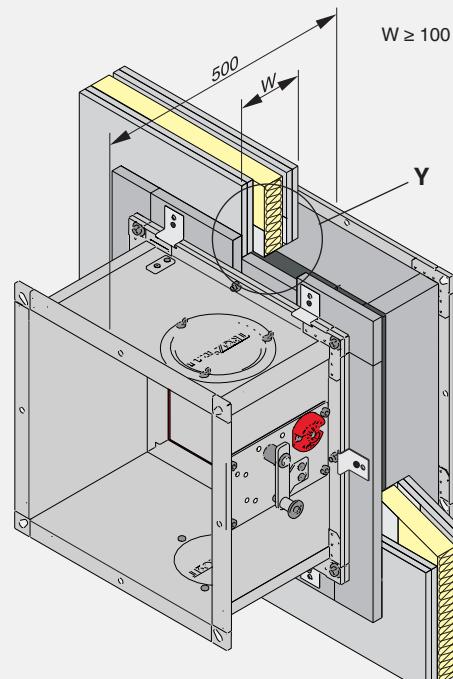
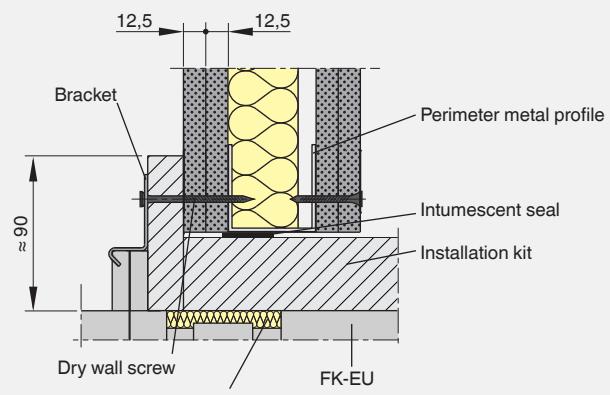


$x = H + 95$ mm

$z = B + 95$ mm

Screw or rivet the profiles

Detail Y



6 Installation

Lightweight partition walls with metal support structure and cladding on both sides

Fire batt – Combinations of width and height up to $B \times H = 800 \text{ mm} \times 400 \text{ mm}$

Dry mortarless installation with fire batt

Dry mortarless installation of the fire damper in lightweight partition walls is approved with a fire batt. Acceptable fire batt systems → P. 9

Requirements

- Lightweight partition walls with a metal support structure and cladding on both sides, with European classification to EN 13501-2 or comparable national classification
- Cladding made of gypsum bonded or cement bonded panel materials and a minimum thickness of 100 mm
- 200 mm minimum distance between two fire dampers but dependent on the selected gap width (50...400 mm)
- 75 mm minimum distance between the fire damper and the adjacent wall or ceiling slab.



Warning!

Contamination or damage will impair the function of the fire damper.

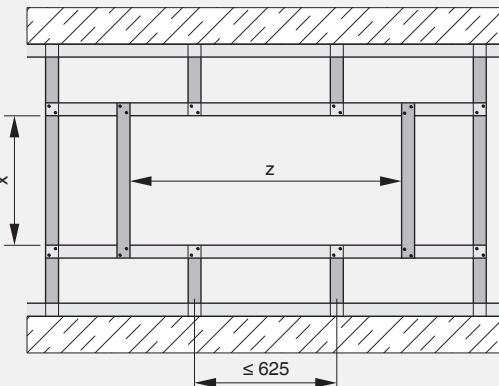
Protect the fire damper from contamination and damage.

- The actuator and release unit must not be coated.

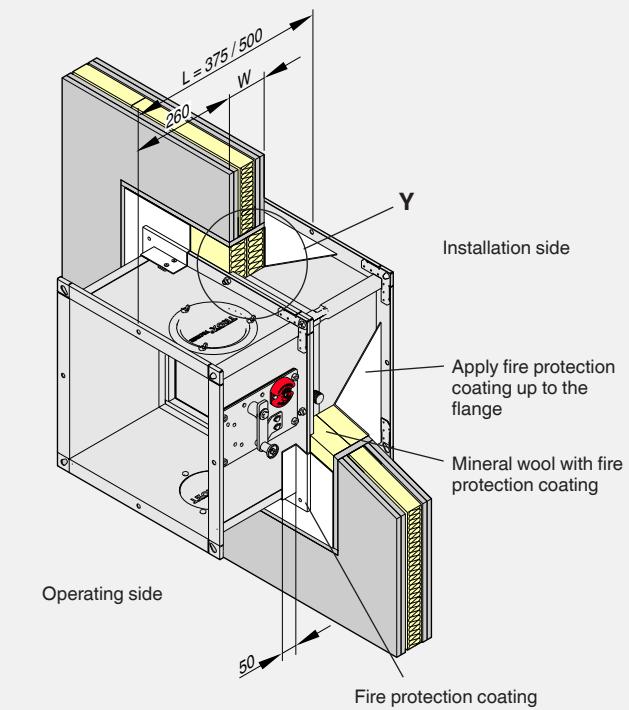
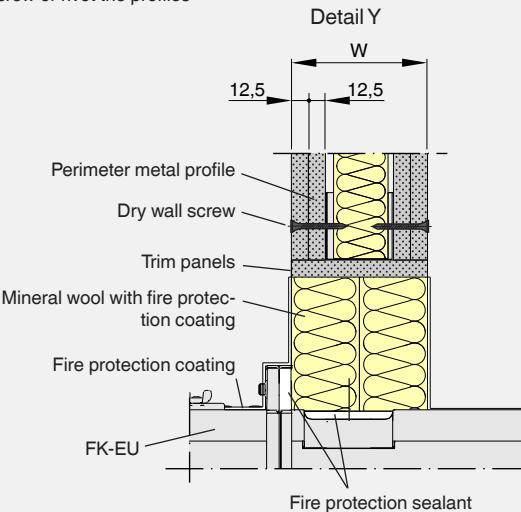
Installation

- Erect the metal support structure according to the manufacturer's instructions. Provide the installation opening with support profiles as shown in the figure opposite.
- Mount the wall cladding.
- Push the fire damper into the wall opening and fix it with threaded rods. → P. 37
- Depending on the length of the fire damper and the wall thickness (→ P. 17 refer to table), extend the fire damper on the installation side with an extension piece (attachment or supplied by others).
- Completely close off the perimeter gap between the fire damper and the wall or ceiling slab with two layers of fire batt (boards made of mineral wool, coated), $\geq 140 \text{ kg/m}^3$. Apply fire protection sealant to the cut faces of the mineral wool boards and fit them tightly into the opening. Seal any gaps between the mineral wool boards and the trim panels, gaps between the cut faces of cut-to-size pieces, and gaps between boards and the fire damper by applying fire protection sealant.
- Apply a fire protection coat, at least 2.5 mm thick, to the fire damper casing perimeter and to the mineral wool boards on both sides of the wall or ceiling slab. Apply the coating on the installation side up to the flange.
- The actuator and release unit must not be coated.

Metal support structure



$x = H + 100 \dots 800 \text{ mm} + 2 \times \text{trim panel thickness}$
 $z = B + 100 \dots 800 \text{ mm} + 2 \times \text{trim panel thickness}$
400 mm maximum distance between fire damper and wall opening
Screw or rivet the profiles



6 Installation

Lightweight partition walls with metal support structure and cladding on both sides

Fire batt – Combinations of width and height from $B \times H = 801 \text{ mm} \times 401 \text{ mm}$

Dry mortarless installation with fire batt

Dry mortarless installation of the fire damper in lightweight partition walls is approved with a fire batt. Acceptable fire batt systems → P. 9

Requirements

- Lightweight partition walls with a metal support structure and cladding on both sides, with European classification to EN 13501-2 or comparable national classification
- Cladding made of gypsum bonded or cement bonded panel materials and a minimum thickness of 100 mm
- 200 mm minimum distance between two fire dampers but dependent on the selected gap width (50...400 mm)
- 75 mm minimum distance between the fire damper and the adjacent wall or ceiling slab.



Warning!

Contamination or damage will impair the function of the fire damper.

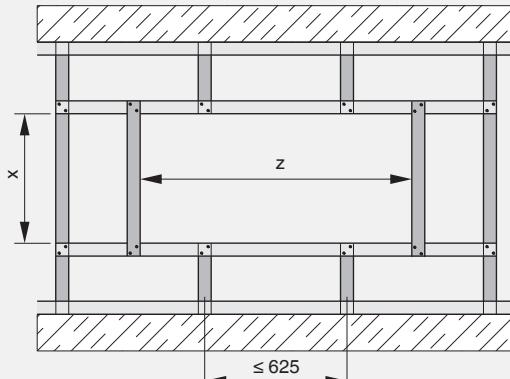
Protect the fire damper from contamination and damage.

- The actuator and release unit must not be coated.

Installation

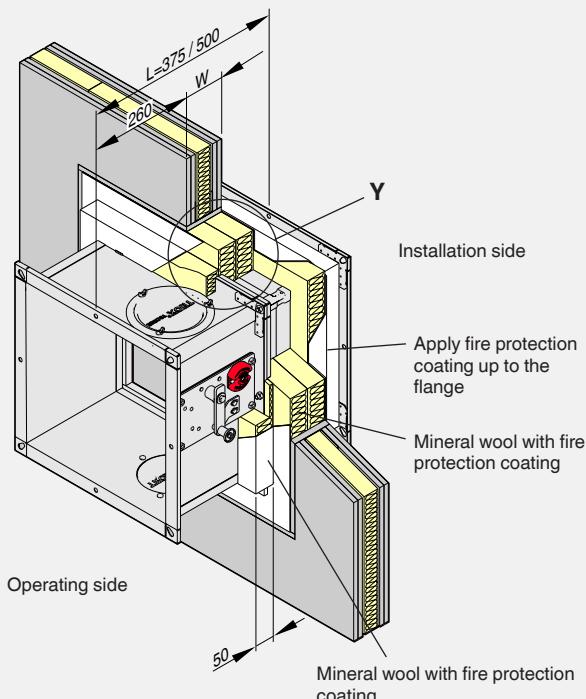
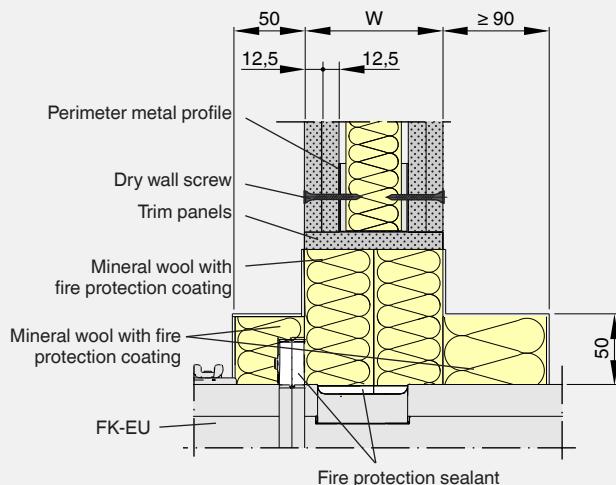
- Erect the metal support structure according to the manufacturer's instructions. Provide the installation opening with support profiles as shown in the figure opposite.
- Mount the wall cladding.
- Push the fire damper into the wall opening and fix it with threaded rods. → P. 37
- Depending on the length of the fire damper and the wall thickness (→ P. 17 refer to table), extend the fire damper on the installation side with an extension piece (attachment or supplied by others).
- Completely close off the perimeter gap between the fire damper and the wall or ceiling slab with two layers of fire batt (boards made of mineral wool, coated), $\geq 140 \text{ kg/m}^3$. Apply fire protection sealant to the cut faces of the mineral wool boards and fit them tightly into the opening. Seal any gaps between the mineral wool boards and the trim panels, gaps between the cut faces of cut-to-size pieces, and gaps between boards and the fire damper by applying fire protection sealant.
- Additionally provide on both sides of the wall or ceiling slab and on three sides of the damper a frame of mineral wool $\geq 140 \text{ kg/m}^3$. Affix the mineral wool above and to the left and right of the fire damper. Do not cover the actuator and release unit.
- Apply a fire protection coat, at least 2.5 mm thick, to the fire damper casing perimeter and to the mineral wool boards on both sides of the wall or ceiling slab. Apply the coating on the installation side up to the flange.
- The actuator and release unit must not be coated.

Metal support structure



$x = H + 100 \dots 800 \text{ mm} + 2 \times \text{trim panel thickness}$
 $z = B + 100 \dots 800 \text{ mm} + 2 \times \text{trim panel thickness}$
400 mm maximum distance between fire damper and wall opening
Screw or rivet the profiles

Detail Y



6 Installation

Lightweight partition walls with metal support structure and cladding on both sides – flexible ceiling joint

Dry mortarless installation with installation kit – flexible ceiling joint

A factory assembled installation kit is required for installation of the fire damper with flexible ceiling joint.

Requirements

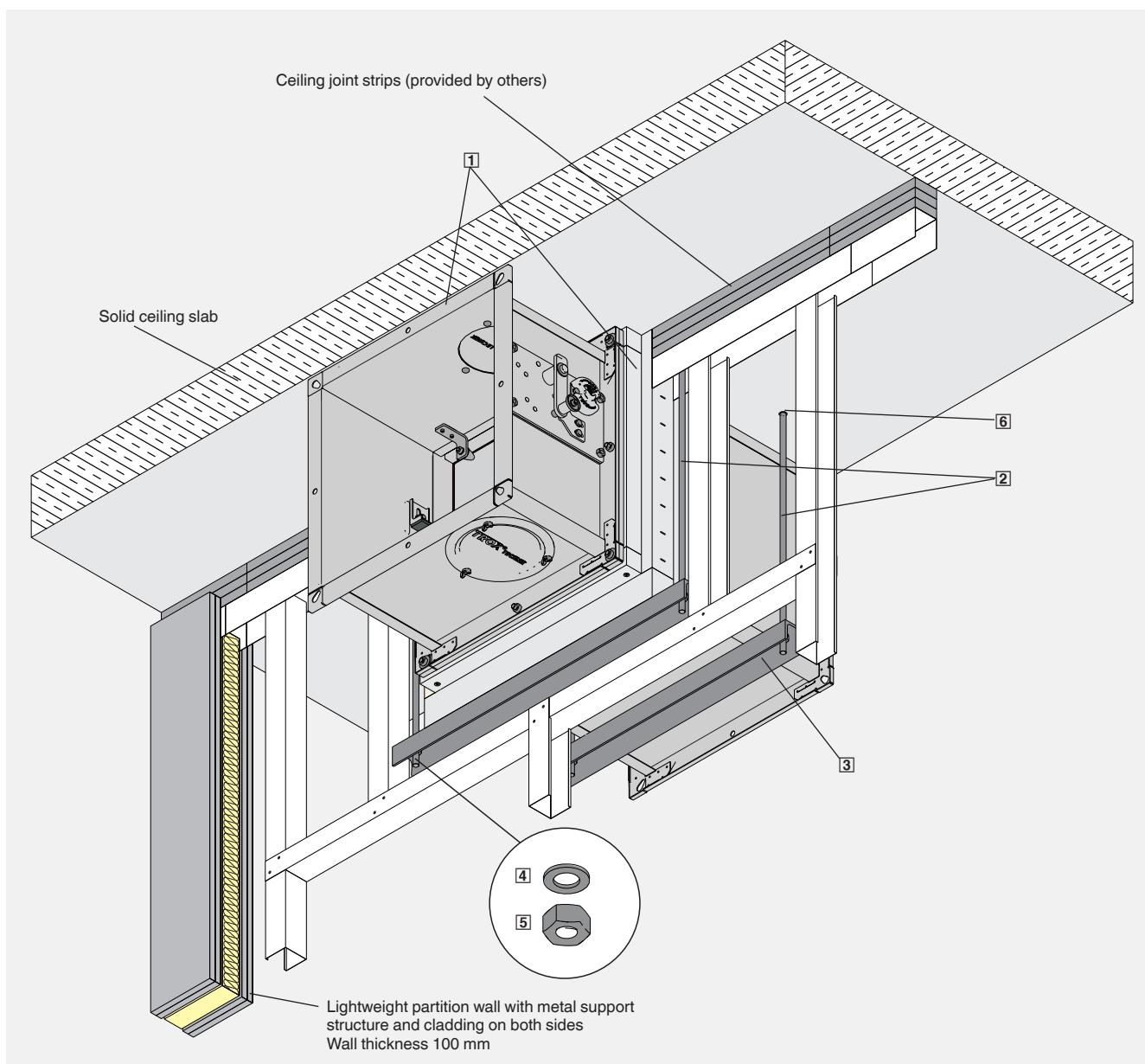
- Lightweight partition walls with a metal support structure and cladding on both sides, with European classification to EN 13501-2 or comparable national classification
- Cladding made of gypsum bonded or cement bonded panel materials and a thickness of $W \geq 100 \leq 225$ mm; width of metal support structure must not exceed 175 mm
- Additional layers of cladding or double stud systems are approved
- Maximum subsidence of the ceiling slab $a \leq 40$ mm
- Casing length $L = 500$ mm
- 400 mm minimum distance between two fire dampers
- 205 mm minimum distance to adjacent wall
- The surface of the ceiling slab must be even.

Installation kit supply package

Item	Qty.	Description
1	1	Fire damper with extension piece and partly assembled installation subframe
2	4	Threaded rod M10 or M12 (depending on size)
3	1	U50 profile DIN 1026
4	4	Washer ¹
5	4	Nut ¹
6	4	Anchors, metal ¹

¹ Appropriate dimensions for threaded rods

A detailed description of the installation can be found on the following pages.



6 Installation

Lightweight partition walls with metal support structure and cladding on both sides – flexible ceiling joint



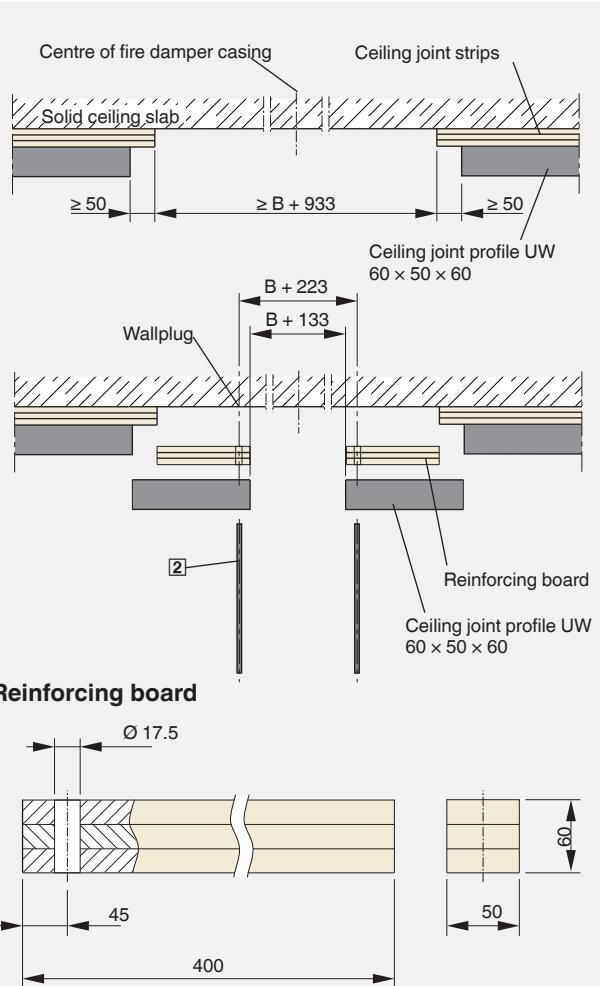
Warning!

Contamination or damage will impair the function of the fire damper.

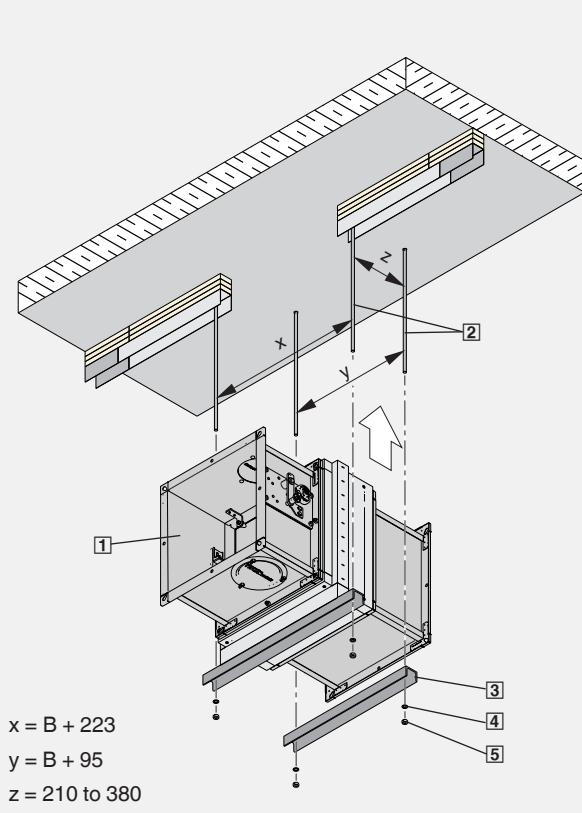
Protect the fire damper from contamination and damage.

To install the fire damper, proceed as follows:

- Attach the ceiling joint strips and the ceiling joint profiles according to the manufacturer's information. Leave out the actual installation location for the fire damper (at least $B + 933$ mm). On both sides the ceiling joint profile must be ≥ 50 mm shorter than the ceiling joint strips. Select the ceiling joint strips and ceiling joint profile according to the expected subsidence of the ceiling slab.
- Drill holes for anchors into the ceiling. → Figure at the bottom
- Insert the anchor according to the installation manual.
- Create reinforcing boards according to the drawing and attach them to the ceiling. The dimensions depend on the ceiling joint (to be provided by others). Keep an area of size $B + 133$ mm clear for the fire damper.
- Mount the ceiling joint profile for the area previously left out. The ceiling joint profile must end flush with the ceiling joint strips.
- Screw the threaded rods into the anchor.
- Attach the fire damper with the U50 profile to the threaded rods. Tighten the nuts until the fire damper and the installation kit are firmly attached to the ceiling.
- Use additional U50 profiles to attach the extension piece of the fire damper to the ceiling.



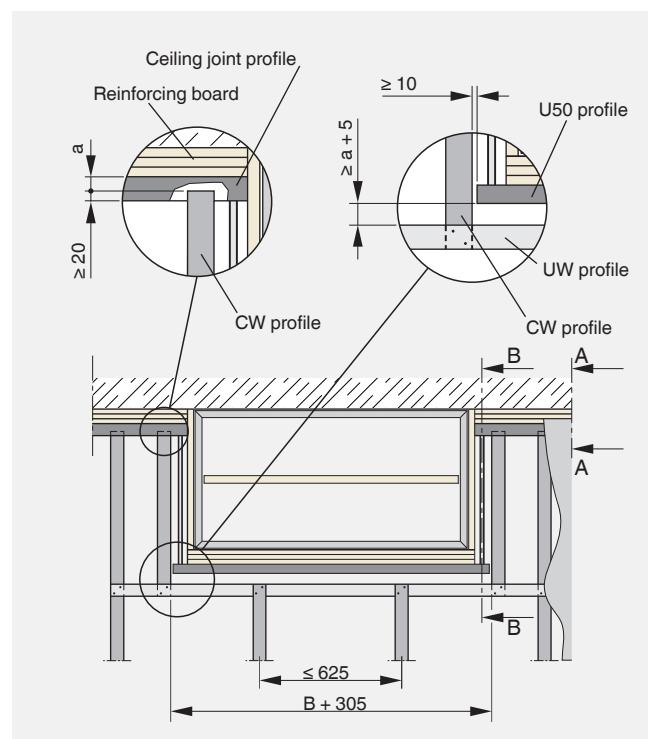
Reinforcing board



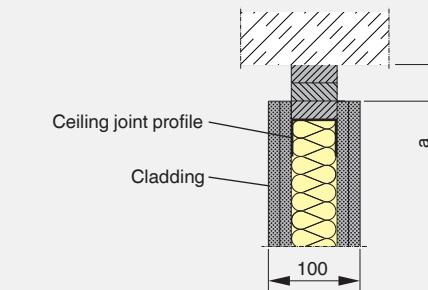
6 Installation

Lightweight partition walls with metal support structure and cladding on both sides – flexible ceiling joint

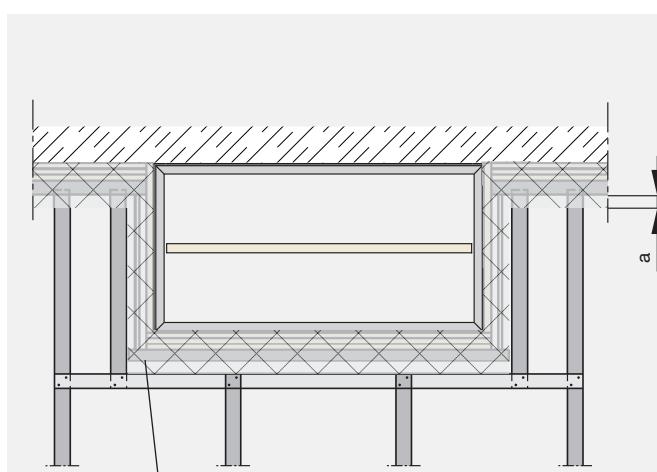
- Completely fill the space between the installation subframe and the metal profile with mineral wool to protect the threaded rods.
- Once the fire damper has been installed, the metal support structure can be set up or completed. The setup has to be carried out according to the general appraisal certificate for the wall. When setting up the wall, the dimensions given in the drawing must be adhered to.
- Construct the wall cladding according to the general appraisal certificate for the wall. No screws must be used in the marked area to fix the cladding to the metal support structure (see figure below).



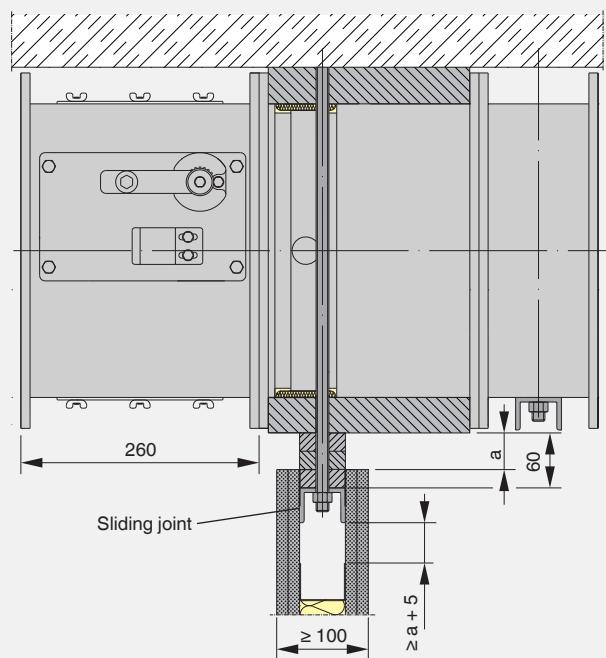
View A - A



View B - B



No screws must be used in the shaded area to fix the cladding to the metal support structure or fire damper.



$a =$ expected subsidence of ceiling slab ≤ 40 mm

6 Installation

Lightweight partition walls with metal support structure and cladding on one side (shaft walls)

Dry mortarless installation with installation kit

Fire dampers with an installation kit are used for installation into shaft walls.

Requirements

- Lightweight partition walls with a metal support structure and cladding on one side with European classification according to EN 13501-2 or comparable national classification
- Cladding made of gypsum bonded or cement bonded panel materials and a minimum thickness of 90 mm
- Wall height 5000 mm max.
- Casing length L = 500 mm
- 200 mm minimum distance between two fire dampers



Warning!

Contamination or damage will impair the function of the fire damper.

Protect the fire damper from contamination and damage.

To install the fire damper, proceed as follows:

- Erect the lightweight partition wall according to the manufacturer's instructions. Provide the installation opening with support profiles as shown in the figure opposite.
- Mount the wall cladding.
- Create a reinforcing board from wall panels around the installation opening for the fire damper.
- Assemble the installation kit with the fire damper.
→ P. 11
- Push the fire damper into the wall opening until the installation kit is flush with the wall.
- Drill Ø 4 mm holes for dry wall screws into the installation kit.
- Attach the fire damper with brackets and dry wall screws to the metal support structure:
 - Side H: One bracket and one dry wall screw on each side.
 - $B \leq 800$ mm: Two brackets and dry wall screws on each side.
 - $B > 800$ mm:
Three brackets and dry wall screws on each side B.

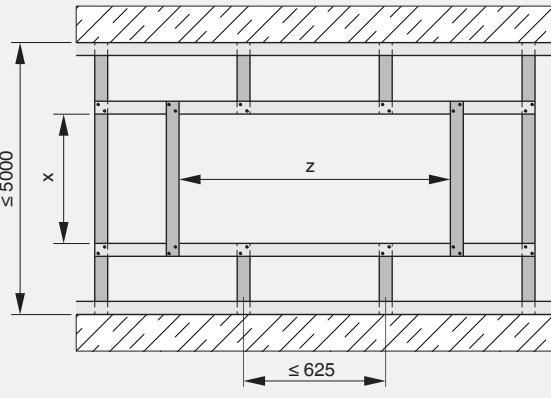


Note

On each side B, the distances between the fastening points should be the same. The dry wall screws must be long enough to ensure fastening to the metal support structure.

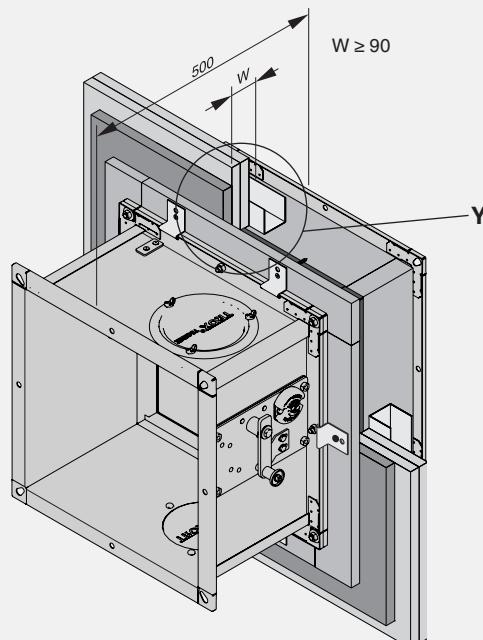
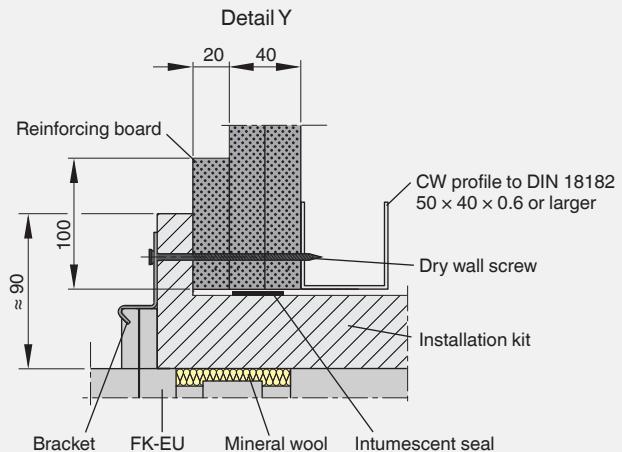
Metal support structure

Wall structure according to general appraisal certificate



x = H + 95 mm
z = B + 95 mm

Screw or rivet the profiles



6 Installation

Lightweight partition walls without metal support structure and cladding on one side (shaft walls)

Dry mortarless installation with installation kit

Fire dampers with an installation kit are used for installation into shaft walls.

Requirements

- Lightweight partition walls without metal support structure, with minimum thickness 40 mm
- Wall height 5000 mm max., wall width 2000 mm max.; any wall width if Promaxon fire-resistant building boards are used
- Casing length L = 500 mm
- 200 mm minimum distance between two fire dampers
- 75 mm minimum distance to load bearing structural elements



Warning!

Contamination or damage will impair the function of the fire damper.

Protect the fire damper from contamination and damage.

To install the fire damper, proceed as follows:

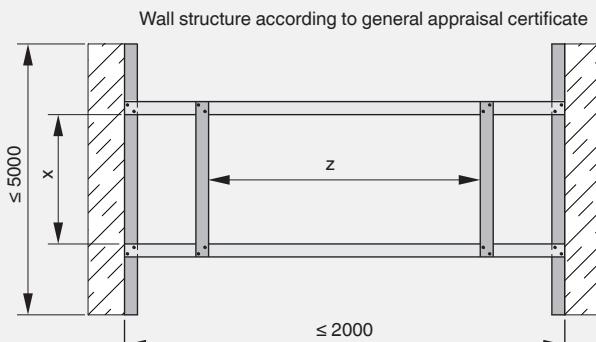
- Erect the lightweight partition wall according to the manufacturer's instructions. Arrange the reinforcing sections in the installation opening as shown in the figure opposite.
- Mount the wall cladding.
- Create a reinforcing board from wall panels around the installation opening for the fire damper.
- Assemble the installation kit with the fire damper.
→ P. 11
- Push the fire damper into the wall opening until the installation kit is flush with the wall.
- Drill Ø 4 mm holes for dry wall screws into the installation kit.
- Attach the fire damper with brackets and dry wall screws to the metal support structure:
 - Side H: One bracket and one dry wall screw on each side.
 - $B \leq 800$ mm: Two brackets and dry wall screws on each side.
 - $B > 800$ mm:
Three brackets and dry wall screws on each side B.



Note

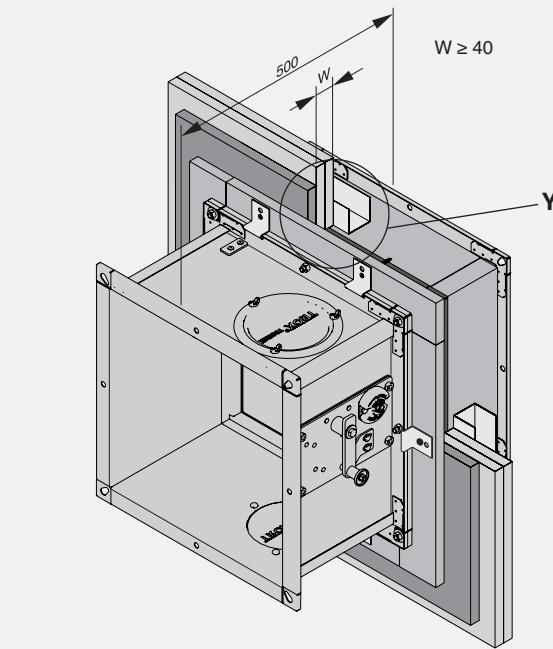
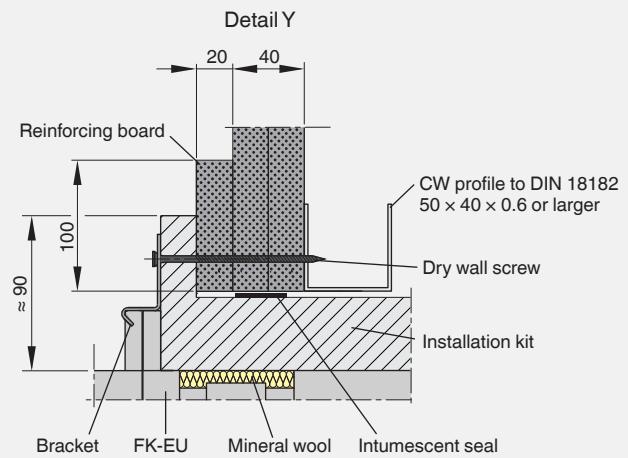
On each side B, the distances between the fastening points should be the same. The dry wall screws must be long enough to ensure fastening to the metal profile.

Metal support structure



x = H + 95 mm
z = B + 95 mm

Screw or rivet the profiles



6 Installation

Fire walls with metal support structure and cladding on both sides

Mortar-based installation

Fire dampers are installed with a perimeter mortar bed.

Requirements

- Lightweight partition walls with a metal support structure and cladding on both sides, with European classification to EN 13501-2 or comparable national classification
- Cladding made of gypsum bonded or cement bonded panel materials and a minimum thickness of 100 mm
- Sheet steel inserts, additional layers of cladding, or double stud systems are approved
- Wall height 5000 mm max.
- 75 mm minimum distance to load bearing structural elements
- 200 mm minimum distance between two fire dampers



Warning!

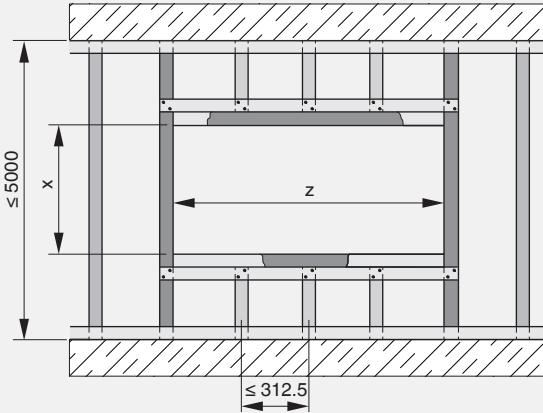
Contamination or damage will impair the function of the fire damper.

Protect the fire damper from contamination and damage.

To install the fire damper, proceed as follows:

- Erect the metal support structure according to the manufacturer's instructions. Provide the installation opening with support profiles as shown in the figure opposite.
- Mount the wall cladding.
- Push the fire damper into the wall opening. Make sure that the distance from the flange on the operating side to the wall is 260 mm.
- Secure the fire damper in place.
- Depending on the length of the fire damper and the wall thickness (refer to table below), extend the fire damper on the installation side with an extension piece (attachment or supplied by others).
- Close off the perimeter gap »S« with mortar. The mortar bed depth must be at least 110 mm.

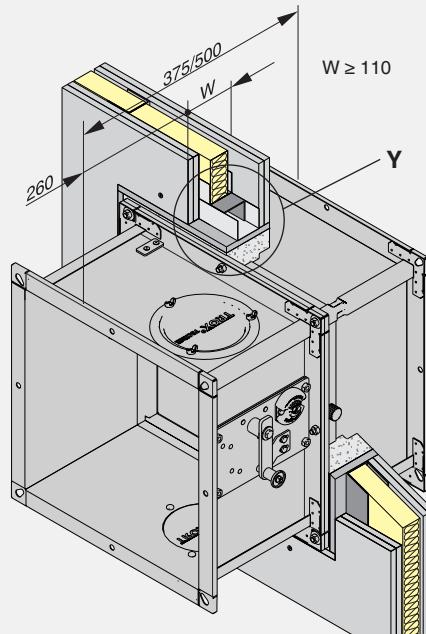
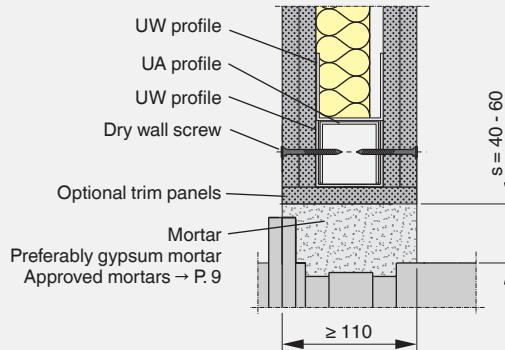
Metal support structure Details → P. 36



$x \geq H + 80 - 120 \text{ mm} (+ \text{trim panel thickness})$
 $z \geq B + 80 - 120 \text{ mm} (+ \text{trim panel thickness})$

Wall structure according to general appraisal certificate

Detail Y



Extension pieces

Length of fire damper	Wall thickness		
	< 115	> 115	> 240
375	-	x	x
500	-	-	x

6 Installation

Fire walls with metal support structure and cladding on both sides

Dry mortarless installation with installation kit

Fire dampers with an installation kit are used for installation into fire walls without a perimeter mortar infill.

Requirements

- Lightweight partition walls with a metal support structure and cladding on both sides, with European classification to EN 13501-2 or comparable national classification
- Cladding made of gypsum bonded or cement bonded panel materials and a minimum thickness of 100 mm
- Sheet steel inserts, additional layers of cladding, or double stud systems are approved
- Wall height 5000 mm max.
- Casing length $L = 500$ mm
- 200 mm minimum distance between two fire dampers



Warning!

Contamination or damage will impair the function of the fire damper.

Protect the fire damper from contamination and damage.

To install the fire damper, proceed as follows:

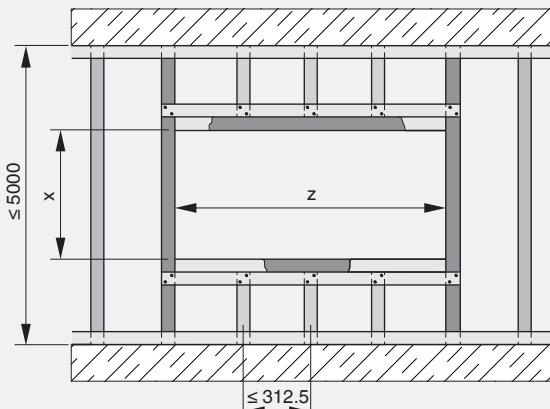
- Erect the metal support structure according to the manufacturer's instructions. Provide the installation opening with support profiles as shown in the figure opposite.
- Mount the wall cladding.
- Assemble the installation kit with the fire damper.
→ P. 11
- Push the fire damper into the wall opening until the installation kit is flush with the wall.
- Drill Ø 4 mm holes for dry wall screws into the installation kit.
- Attach the fire damper with brackets and dry wall screws to the metal support structure:
 - Side H: One bracket and one dry wall screw on each side.
 - $B \leq 800$ mm: Two brackets and dry wall screws on each side.
 - $B > 800$ mm:
Three brackets and dry wall screws on each side B.



Note

The distances between the fastening points should be the same. The dry wall screws must be long enough to ensure fastening to the metal profile.

Metal support structure Details

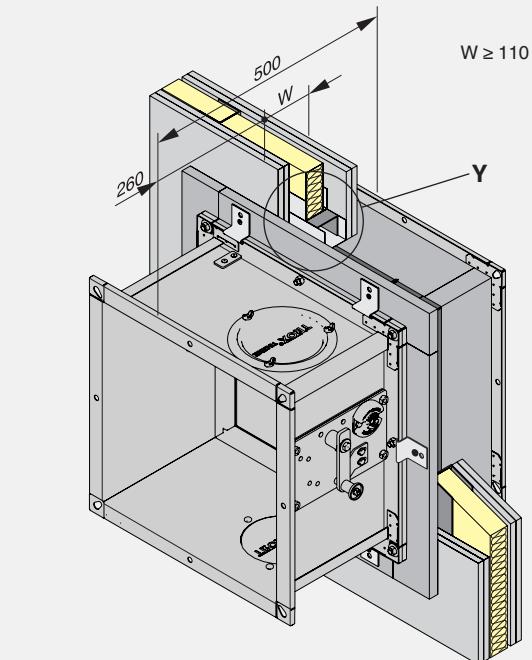
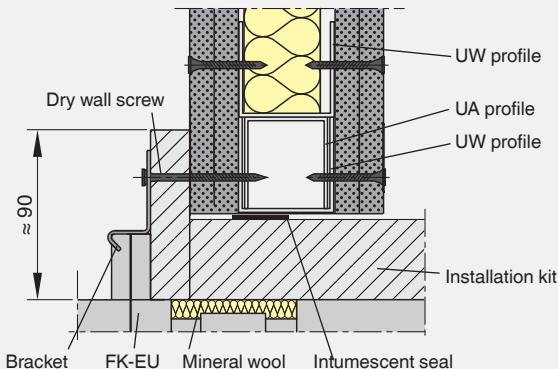


Wall structure according to general appraisal certificate

$$x = H + 95 \text{ mm}$$

$$z = B + 95 \text{ mm}$$

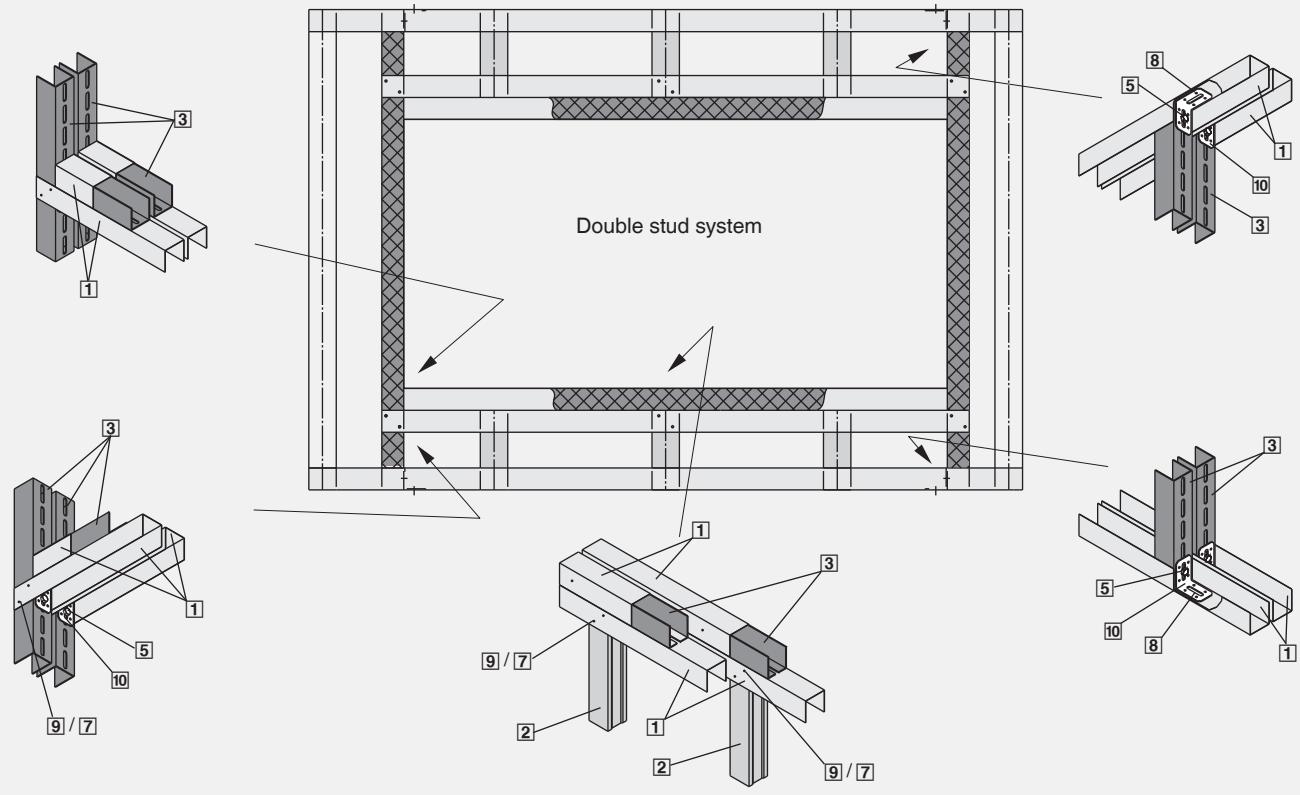
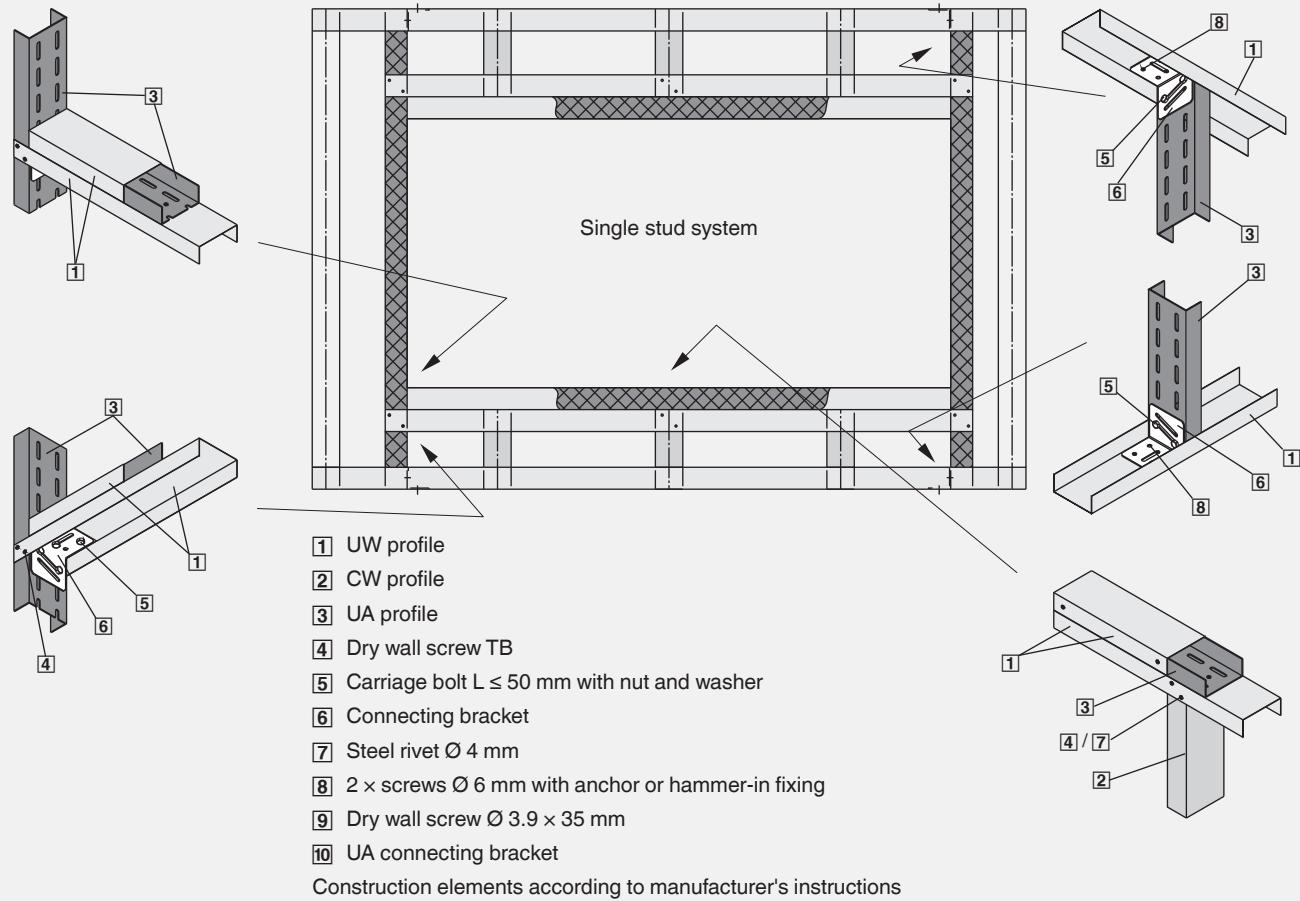
Detail Y



6 Installation

Fire walls with metal support structure and cladding on both sides

Metal support structure for fire walls - details



6 Installation

Suspension systems

General information

Fire dampers can be suspended from solid ceiling slabs using adequately sized threaded rods. Load the suspension system only with the weight of the fire damper. Ducts must be suspended separately. → P. 39

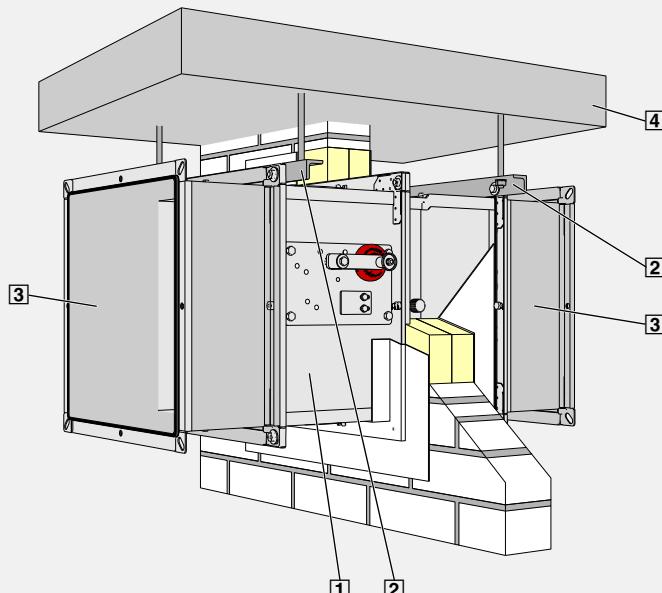
Suspension systems longer than 1.5 m require fire-resistant insulation.

Thread	M8	M10	M12	M14	M16	M20
Fmax (N) per threaded rod	219	348	505	690	942	1470
Max. loading capacity (kg) per threaded rod	22	35	50	70	95	150

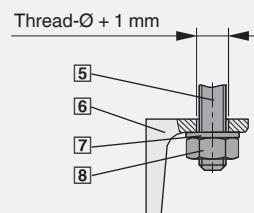
Fixing to the ceiling slab

Only metal anchors with certified fire protection qualification and suitable for the ceiling must be used. Instead of anchors, threaded rods can be used and can be secured using nuts and washers.

Fire batt used with horizontal ducts



L-bracket



[1] FK-EU

[2] Suspension, e.g. with L bracket

[3] Flexible connector

[4] Solid ceiling slab

[5] Threaded rod, galvanised steel

Threaded rods must be selected according to the expected load, see table → P. 7

Suspension systems longer than 1.5 m require fire-resistant insulation

[6] L-bracket according to EN 10056-1, L ≥ 40 mm × 40 mm × 5 mm, galvanised steel, coated or equivalent

[7] Washer, galvanised steel

[8] Nut, galvanised steel

6 Installation

Suspension systems

Fire batt with vertical ducts

Installation of the fire damper with a fire batt in vertical ducts requires the fire damper to be fixed both above and below the ceiling slab; see drawings

The fire damper should be suspended along the shorter casing sides if at all possible.



Warning!

Danger of falling off! Do not step onto the fire batt!
The fire batt cannot carry any loads.

Adequate means, e.g. a permanent barrier, must be installed to prevent people from stepping onto the fire batt.

Length of mounting rails:

Size of cut hole, for example + 2 x distance between edge of cut hole and anchor	1600 mm
	200 mm
+ 1 x mounting rail length beyond anchor	100 mm

$$L_S = 1600 \text{ mm} + 2 \times 200 \text{ mm} + 100 \text{ mm} = 2100 \text{ mm}$$

[1] FK-EU

[2] Mounting rail
Würth Varifix 36 × 36 × 2.5 or Müpro MPC 38/40 or equivalent

[3] Bracket
Varifix or Müpro MPC or equivalent

[4] Screw M10 × 70

[5] Threaded rod, galvanised steel
Threaded rods must be selected according to the expected load,
at least M8, see table → P. 7.
Fixing to the ceiling slab → P. 37
Suspension systems longer than 1.5 m require fire-resistant
insulation.

[6] Washer, galvanised steel

[7] Nut, galvanised steel

[8] Underlay material, non-combustible (to be provided by others)

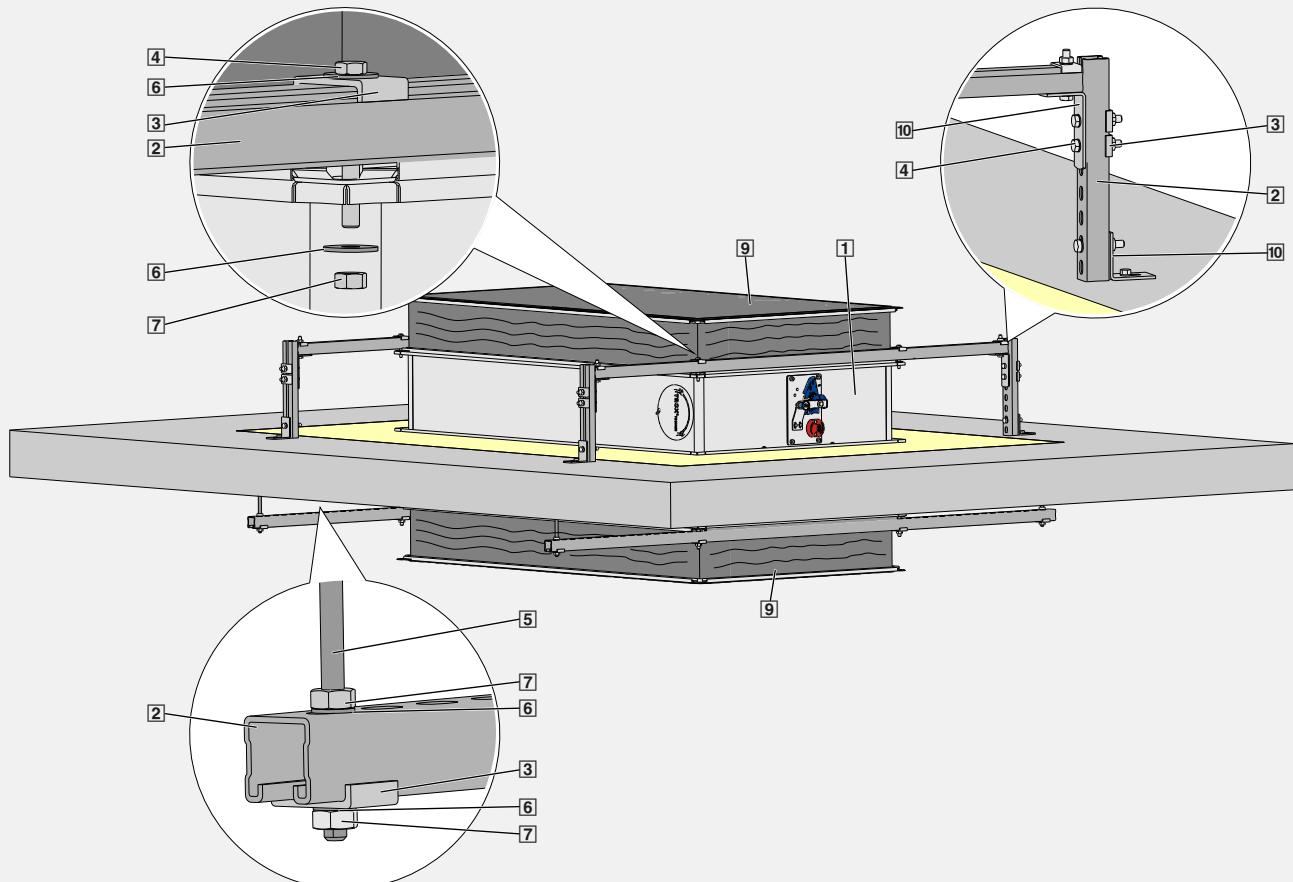
[9] Flexible connector

[10] Bracket
Varifix ANSHWNKL-PRFL36-90GRAD or Müpro mounting
bracket 90°, galvanised, or equivalent

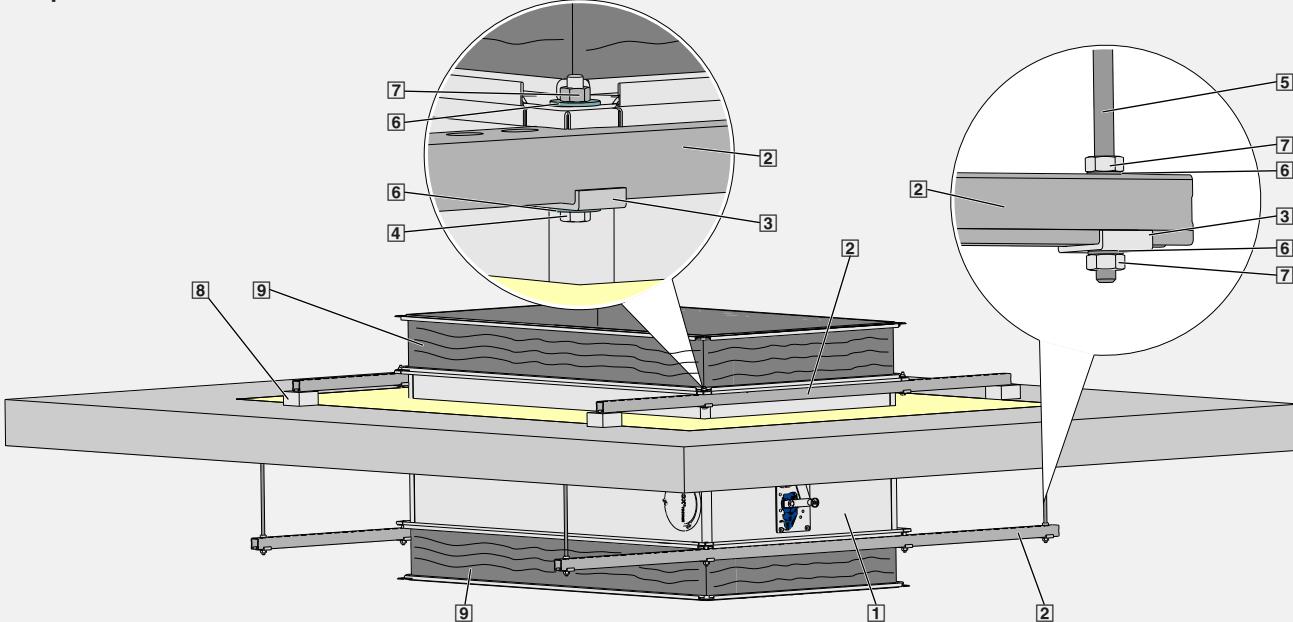
6 Installation

Suspension systems

Upright installation



Suspended installation



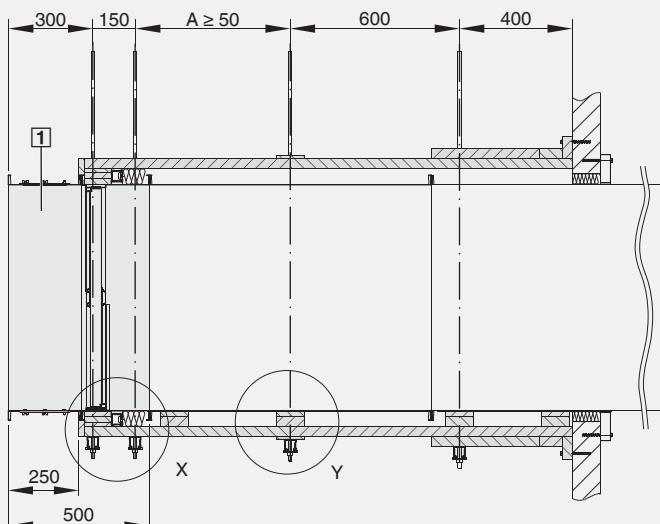
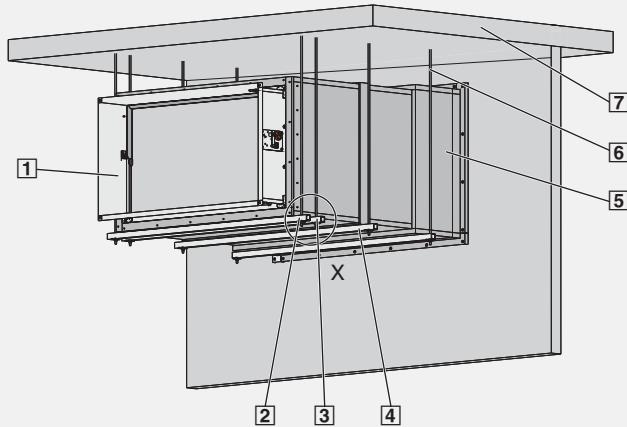
Explanation → P. 38

6 Installation

Suspension systems

Remote from solid walls

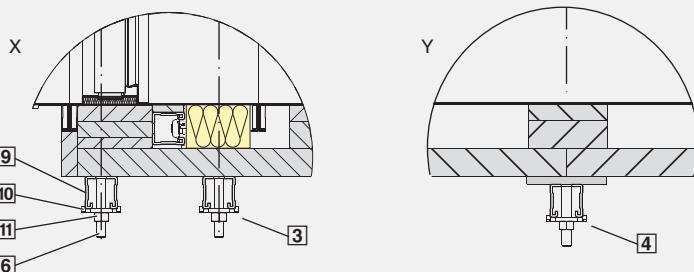
Installation example for $B \times H > 1000 \times 600$ mm



Note:

If anchors are used, the distance between them must comply with the manufacturer's information.

If distance A is smaller than the acceptable distance for the selected anchors, the panel joint [4] may be moved in order to increase the distance.



- [1] FK-EU
- [2] Suspension
- [3] 2nd suspension is required only for fire dampers sized $B \times H > 1000 \times 600$ mm
- [4] Suspension at a panel joint
- [5] Fire-resistant duct

- [6] Threaded rod M12, galvanised steel
Fixing to the ceiling slab → P. 37
Suspension systems longer than 1.5 m require fire-resistant insulation.
- [7] Solid ceiling slab
- [9] Hilti mounting rail MQ 41 x 3 or equivalent
- [10] Hilti perforated plate MQZ L13 or equivalent
- [11] Hexagonal nut M12

7 Connecting the duct

Flexible connectors

Ducting must be installed in such a manner that it does not impose any loads on the fire damper in case of a fire.

For information on how to limit such loads please refer to the guideline regarding fire protection requirements on ventilation systems (Lüftungsanlagen-Richtlinie, LÜAR).

The expansion of ducts in case of a fire may be compensated by brackets and turns; see picture to the right.

As ducts may expand and walls may become deformed in case of a fire, we recommend for the following applications using flexible connectors when connecting the fire damper to rigid ducts:

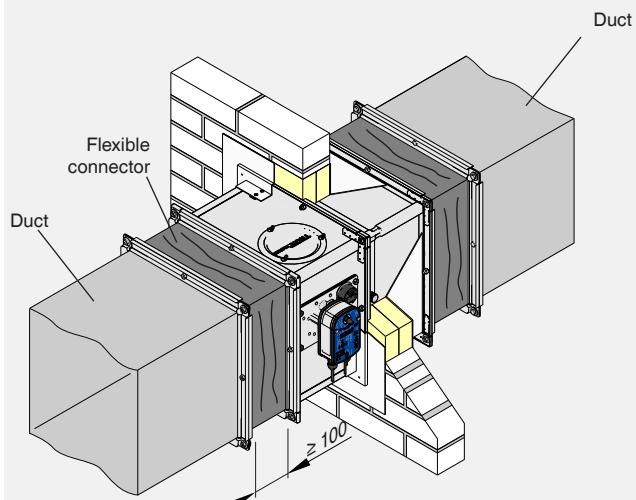
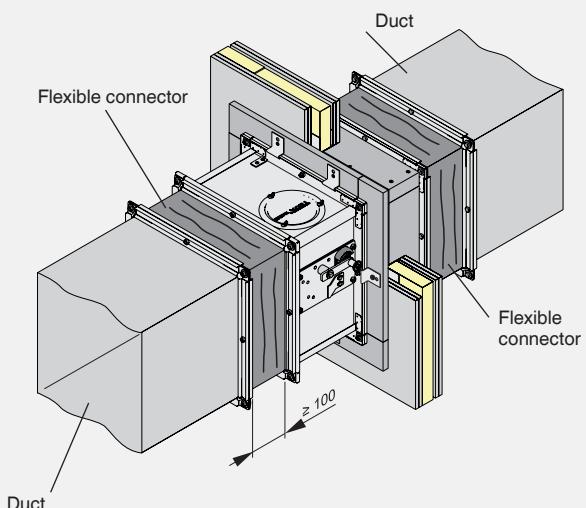
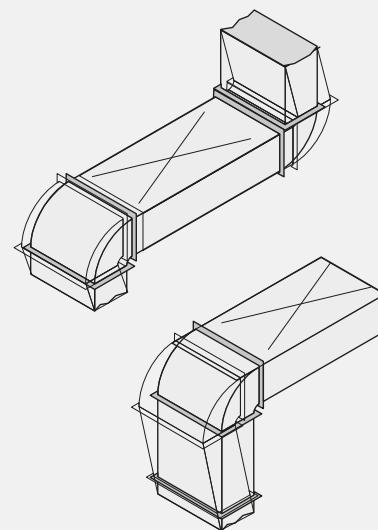
- in lightweight partition walls
- in lightweight shaft walls
- with a fire batt

The flexible connectors should be installed in such a way that both ends can compensate both tension and compression. Flexible ducts can be used as an alternative.

For certain heights an extension piece may be required, see table page 42.

If flexible connectors are used, equipotential bonding must be ensured. → P. 43

Limiting loads by brackets and turns



7 Connecting the duct

Circular spigots

Circular spigots (attachments) can be used to connect the fire damper to circular ducts.

Cover grille

If only one end is to be ducted on site, the other end must have a cover grille (galvanised steel, mesh aperture ≤ 20 mm).

Extension piece

When using cover grilles, circular spigot plates, flexible connectors, pipe bends, etc., an extension piece may be required for certain heights. Refer to the table below for minimum lengths required.



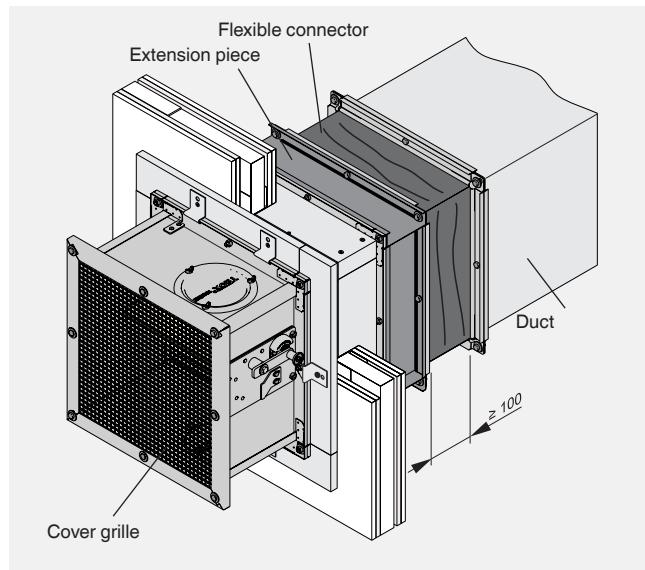
Note

The movement of the damper blade must not be obstructed by any attachment. The minimum distance between the tip of the open damper blade and any attachment must be at least 50 mm.

Inspection access

The interior of the fire damper must remain accessible for repairs. For this purpose, FK-EU fire dampers have two inspection panels. → P. 5

Depending on the installation configuration it may be necessary to provide additional inspection access points in the connecting ducts.



Extension pieces [mm]		
H	Operating side	Installation side
200 – 300	–	–
350 – 500	–	120
550 – 800	120	260

8 Electrical connection



Danger!

Danger of electric shock! Do not touch any live components! Electrical equipment carries a dangerous electrical voltage.

- Only skilled qualified electricians are allowed to work on the electrical system.
- Switch off the power supply before working on any electrical equipment.

For any wiring work, follow the national and local regulations and guidelines for electrical installation.

Equipotential bonding

If equipotential bonding is a requirement, there must be an electrical earth connection from the fire damper to the duct.

In case of a fire, mechanical loads from the equipotential bonding must not affect the fire damper.

Limit switches for FK-EU with fusible link

The limit switches must be connected according to the wiring example opposite.

Indicator lights or relays can be connected as long as the performance specifications are taken into consideration.

The limit switches can be used as make or break contacts for signalling purposes.

FK-EU with spring return actuator

The FK-EU fire damper may be equipped with a spring return actuator for a supply voltage of 230 V AC or 24 V AC/DC.

Observe the performance data on the rating plate.

Connect the spring return actuator according to the wiring example opposite.

Several actuators can be connected in parallel as long as the performance specifications are taken into consideration.

BF/BLF24-T-ST TR must only be connected to safety transformers.

The connecting cables of the BF/BLF24-T-ST TR are fitted with plugs. This ensures quick and easy connection to the TROX AS-i bus system.

For connection to the terminals, shorten the connecting cable.

AS-i/LON modules

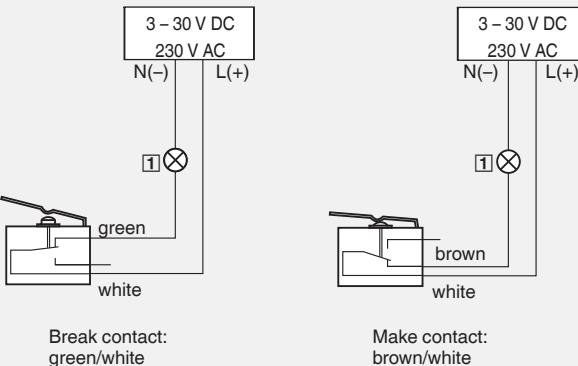
To connect AS-i or LON modules, refer to the project-specific wiring diagrams.

For further information on AS-i and LON refer to our website: www.troxtechnik.com.

Wiring example for limit switch

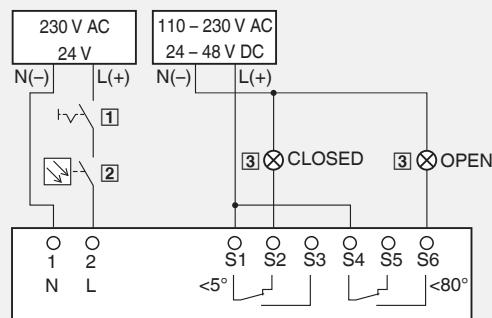
CLOSED or OPEN position not reached – limit switch is not actuated

CLOSED or OPEN position reached – limit switch is actuated



[1] Indicator light or relay, to be provided by others

Wiring example for spring return actuator



[1] Switch for opening and closing, to be provided by others

[2] Optional release mechanism, e.g. TROX smoke detector type RM-O-3-D or RM-O-VS-D

[3] Indicator light, to be provided by others

9 Functional test

General information

During operation at normal temperatures, the damper blade is open. A functional test involves closing the damper blade and opening it again. The exact procedure depends on the type of release mechanism.



Warning!

Danger of injury when touching the release mechanism or when reaching into the fire damper while the damper blade is moving.

Do not touch the release mechanism or reach into the fire damper while actuating the release mechanism.

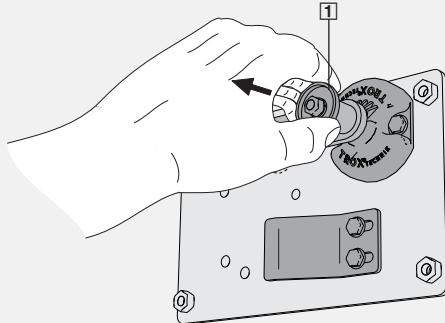
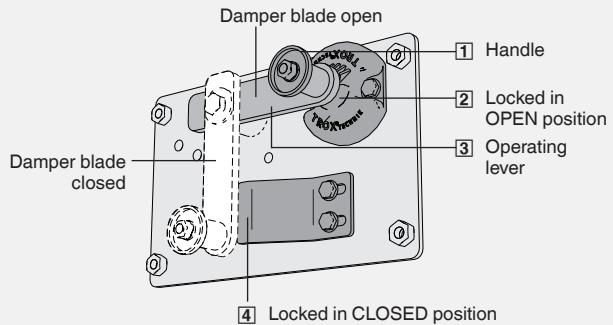
FK-EU with fusible link

Closing the damper blade

To close the damper blade (manual release), proceed as follows:

1. Grasp the handle **1** with the index finger, middle finger, and thumb.
2. Pull the handle **1** and release it again.
The damper blade closes automatically and locks in the CLOSED position **4**.

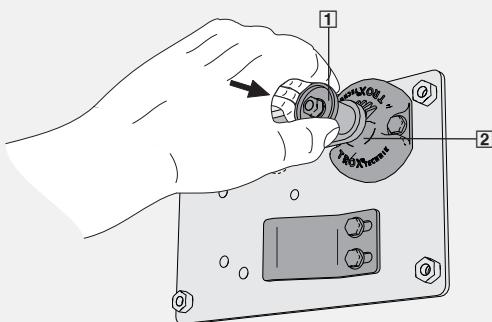
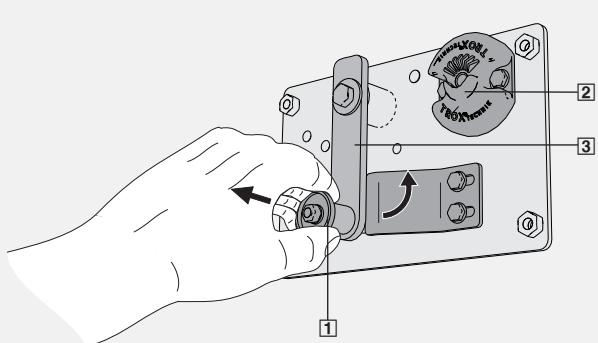
Releasing the damper blade manually



Opening the fire damper

To open the damper blade, proceed as follows:

1. Pull the handle **1**.
2. Rotate the lever **3** by 90° towards the interlock **2** as shown.
3. Engage the lever **3** with the handle **1** in the interlock **2**.
The damper blade is locked in the OPEN position.



10 Functional test

FK-EU with spring return actuator



Warning!

Danger of injury when reaching into the fire damper while the damper blade is moving.

Do not reach into the fire damper while actuating the release mechanism. Make sure that the damper blade cannot be released inadvertently.

Closing/opening the damper blade with spring return actuator BLF/BF

When power is supplied to the actuator, the functional test can be performed either by remote control from the central BMS or by actuating the release mechanism on the fire damper.

To perform a functional test locally, proceed as follows:

1. Interrupt the power supply by pushing and holding the toggle switch [1].
The spring return actuator causes the damper blade to close.
2. Reconnect the power supply by letting go of the toggle switch [1].
The spring return actuator causes the damper blade to open.

Opening the damper blade using the crank handle



Warning!

Danger due to malfunction of the fire damper.

If the damper blade has been opened by means of the crank handle (without power supply), it will no longer be triggered by a temperature increase, i.e. in case of a fire. In other words, the damper blade will not close.

To re-establish its function, connect the power supply.

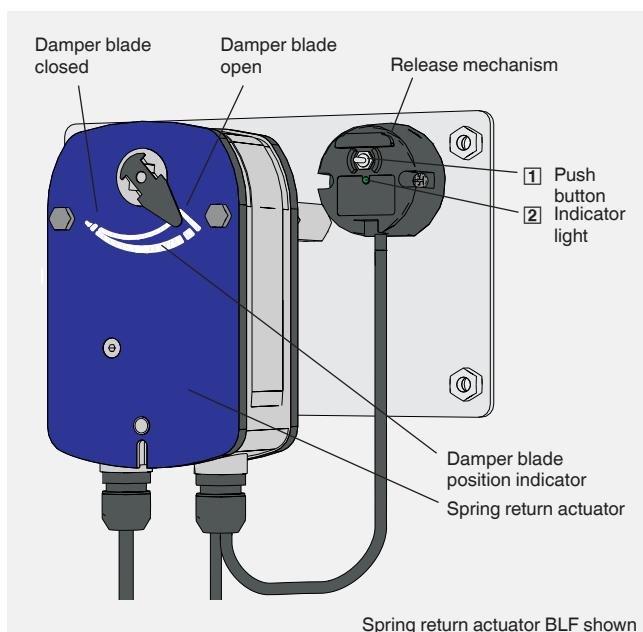
To open the damper blade, proceed as follows:

1. Insert the crank handle [3] into the opening for the spring-winding mechanism. (The crank handle is clip-fixed to the connecting cable.)
2. Rotate the crank handle [3] into the direction of the arrow [4] to just short of the travel stop.
3. Quickly rotate the crank handle [3] by approx. 90° towards the 'lock' position [5].
The damper blade remains in the OPEN position.
4. Remove the crank handle [3].

Closing the damper blade using the crank handle

To close the damper blade (manual release), proceed as follows:

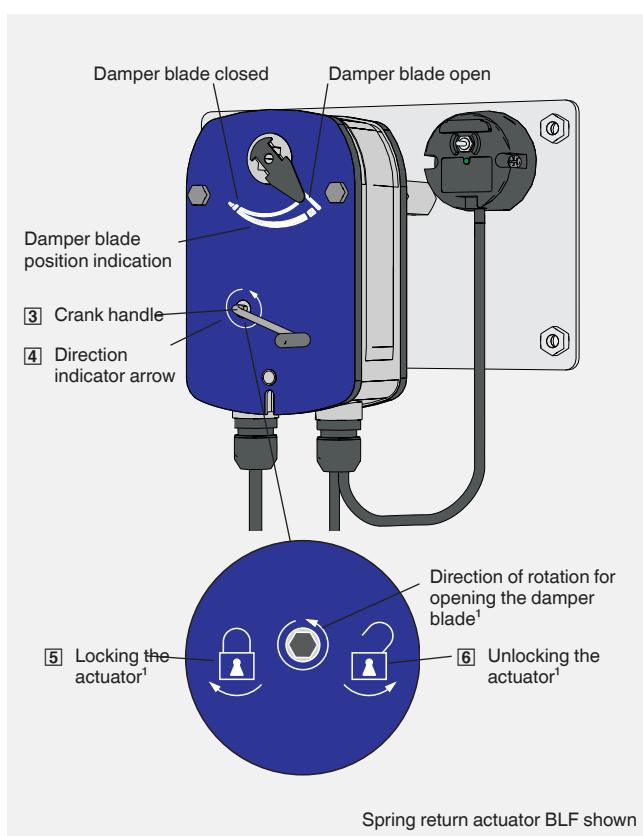
1. Insert the crank handle [3] into the opening for the spring-winding mechanism.
2. Rotate the crank handle [3] by approx. 90° towards the 'unlock' position [6] until a click can be heard.
The spring return actuator causes the damper blade to close.
3. Remove the crank handle [3].



Spring return actuator BLF shown

The indicator light [2] is illuminated when all of the following conditions apply:

- power is supplied
- the thermal fuses are intact
- the toggle switch [1] is not being pushed



Spring return actuator BLF shown

¹ Rotation direction depends on the spring return actuator

10 Commissioning

Before commissioning, each fire damper must be inspected to determine and assess its actual condition.

The inspection measures to be taken are listed in the table on page 49.

Operation

After commissioning and the subsequent inspection, the fire damper will operate independently and require no intervention on the part of the plant operator.

During normal operation the damper blade is open to enable air passage through the ventilation system.

If the temperature in the duct or the ambient temperature rises in case of a fire, a thermal release mechanism is triggered and closes the damper blade.

11 Maintenance

Danger!

Danger of electric shock! Do not touch any live components! Electrical equipment carries a dangerous electrical voltage.

- Only skilled qualified electricians are allowed to work on the electrical system.
- Switch off the power supply before working on any electrical equipment.

Important!

Danger due to inadvertently actuating the fire damper.

Inadvertent actuation of the damper blade or other parts can lead to injuries. Make sure that the damper blade cannot be released inadvertently.

Regular care and maintenance ensure operational readiness, functional reliability, and long service life of the fire damper.

Maintenance should be carried out according to EN 15423. For Germany, DIN 31051 also applies.

The operator of the system is responsible for the maintenance of the fire damper. The operator is responsible for creating a maintenance plan, for defining the maintenance objectives, and for the functional reliability of the fire damper.

Maintenance

The fire damper and the spring return actuator are maintenance-free with regard to wear but fire dampers must still be included in the regular cleaning of the ventilation system.

Inspection

The fire damper must be inspected before commissioning.

After that, the functional reliability of the fire damper must be tested at least every six months. If two consecutive tests within six months are successful, the next test can be conducted one year later. Local requirements and building regulations must be complied with.

The inspection measures to be taken are listed in the table on page 49.

The test of each fire damper must be documented and evaluated. If the requirements are not fully met, suitable remedial action must be taken.

Repair

For safety reasons, repair work must only be carried out by expert qualified personnel or the manufacturer. Only original replacement parts are to be used. A functional test is required after any repair work.

11 Maintenance

Lubricating points

Lubricate the lubricating points [1] to [9] only if the damper blade cannot be opened or closed easily. Use only oil or grease that is free of resins or acids.

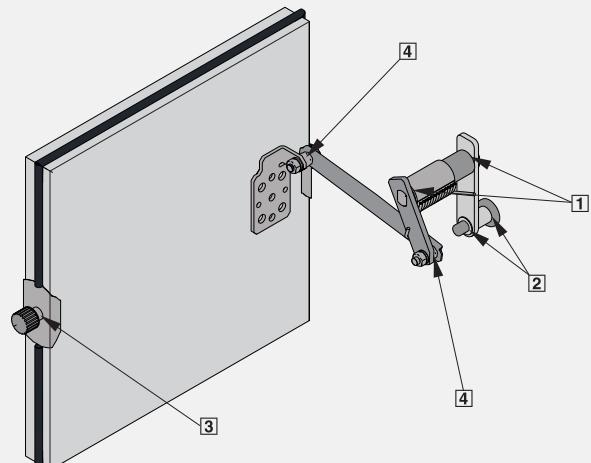


Warning!

Danger of injury when touching the release mechanism or when reaching into the fire damper while the damper blade is moving.

Do not touch the release mechanism or reach into the fire damper while actuating the release mechanism. Make sure that the damper blade cannot be released inadvertently.

FK-EU with fusible link



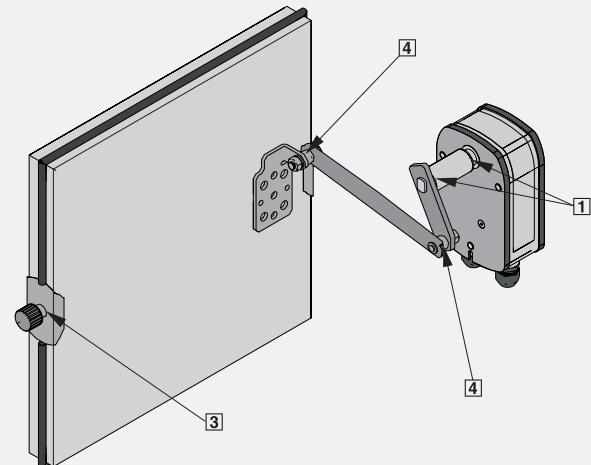
Lubricating points of FK-EU with fusible link

Item	Interval	Description
[1]	as required	Bearings
[2]	as required	Tappet of release mechanism
[3]	as required	Damper blade bearings (both sides)
[4]	as required	Push rod bearings

Lubricating points for FK-EU with spring return actuator

Item	Interval	Description
[1]	as required	Bearings
[3]	as required	Damper blade bearings (both sides)
[4]	as required	Push rod bearings

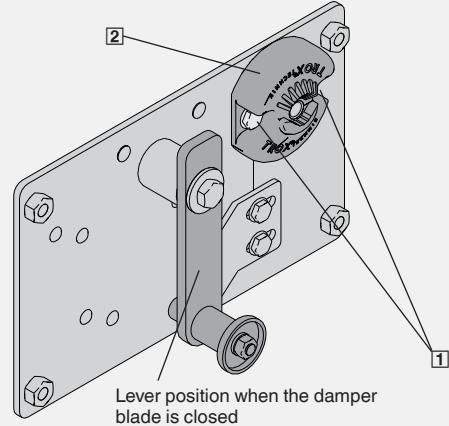
FK-EU with spring return actuator



11 Maintenance

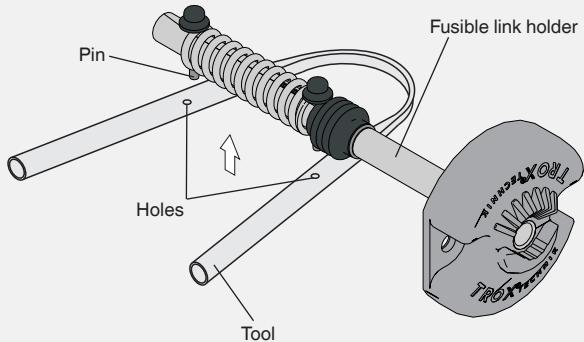
Replacing the fusible link

1. Close the damper blade. → P. 44
2. Release screws **1** on the fusible link holder **2**.
3. Remove fusible link holder from the fire damper.

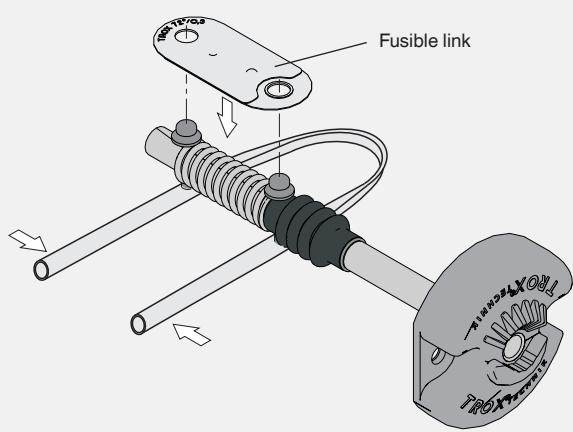


4. Insert the pins of the fusible link holder into the corresponding holes of the tool.

Tool Part no. E 571 NE 0



5. Use the tool to compress the spring of the fusible link holder.
6. Insert fusible link (after removing used fusible link, if any).
7. Put fusible link holder **2** back into the fire damper and fix it with screws **1**.
8. Carry out functional test. → P. 44



11 Maintenance

Inspection, maintenance and repair measures

Item to be checked	Interval			Required condition	Remedial action if necessary
	Before commissioning	Regularly	As required		
Accessibility of the fire damper	x			Internal and external accessibility	Provide access.
Installation of the fire damper	x			Installation into walls/ceiling slabs according to the operating manual → P. 9	Install the fire damper correctly.
Ducting / cover grille / flexible connector	x			Connection according to the operating manual → P. 41	Establish correct connection.
Damage to the fire damper	x	x		No damage	Repair or replace the fire damper.
Power supply to the spring return actuator	x			Power supply according to rating plate of the fire damper	Adjust power supply.
Contamination	x		x	No contamination inside	Clean the fire damper.
Damper blade and seal	x	x		Damper blade / seal OK	Replace the damper blade/seal.
Function of the release mechanism	x	x		Function OK	Replace the release mechanism.
Fusible link	x	x		Fusible link intact	Replace the fusible link. → S. 48
Function of FK-EU with fusible link, blade closure by manual release → P. 44	x	x		<ul style="list-style-type: none"> • Damper blade closes independently. • The spring-loaded pin of the collar locks behind the locking plate such that the damper is locked in the CLOSED position. 	Replace the release mechanism.
Function of FK-EU with fusible link, blade opening by manual release → P. 44	x	x		<ul style="list-style-type: none"> • Damper blade can be opened manually. • Handle can be locked into the OPEN position using the release mechanism. 	<ul style="list-style-type: none"> • Determine and eliminate the cause of the fault. • Repair or replace the fire damper. • Replace the release mechanism.
Function of FK-EU with spring return actuator, blade closure → P. 45	x	x		<ul style="list-style-type: none"> • Function of actuator OK • Damper blade closes 	<ul style="list-style-type: none"> • Check the supply voltage. • Replace the spring return actuator. • Repair or replace the fire damper.
Function of FK-EU with spring return actuator, blade opening → P. 45	x	x		<ul style="list-style-type: none"> • Function of actuator OK • Damper blade opens 	<ul style="list-style-type: none"> • Check the supply voltage. • Replace the spring return actuator. • Repair or replace the fire damper.
Function of the external smoke detectors	x	x		Function OK	Determine and eliminate the cause of the fault.
Function of limit switches	+	+		Function OK	Replace the limit switches.
Function of the external signalling (damper blade position indicator)	+	+		Function OK	Determine and eliminate the cause of the fault.

x = Required

+ = Recommended

12 Decommissioning, removal and disposal

Final decommissioning

1. Switch off the ventilation system.
2. Switch off the power supply.

Removal

1. Disconnect the wiring.



Danger!

Danger of electric shock! Do not touch any live components! Electrical equipment carries a dangerous electrical voltage.

- Only skilled qualified electricians are allowed to work on the electrical system.
- Switch off the power supply before working on any electrical equipment.

2. Remove the ducts.

3. Close the damper blade.

4. Remove the fire damper.

Disposal

For disposal, the fire damper must be disassembled.

Dispose of electronic components according to the local electronic waste regulations.

